

THE PRACTICE OF
GARMENT-PATTERN
MAKING

W. H. HULME

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By the same Author

**THE THEORY OF GARMENT-
PATTERN MAKING**

THE PRACTICE OF GARMENT-PATTERN MAKING

*A TEXTBOOK FOR CLOTHING DESIGNERS,
TEACHERS OF CLOTHING TECHNOLOGY,
AND SENIOR STUDENTS*

BY

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TO MY MOTHER
MARY VICKERSTAFFE DYCHE

FOREWORD

THIS volume is the practical extension of the previous work on *The Theory of Garment-Pattern Making*, and applies the principles stated in that textbook: taken together, they set forth the theory and practice of the subject.

Every writer on garment production is confronted with a choice of method: either he will cover as many contemporary garment types as his publisher will permit, or he will select only those garments which illustrate the principles stated. If the first alternative were chosen the work would be out of date as soon as the selected garments passed out of fashion. The second method, however, permits of a selection of garment types from the common stock of dress with the single view to demonstrating the theory of the subject: this approach has been made here.

Again, no distinction has been made between garments for the female and the male: a garment, as such, knows nothing of sex: variations in size and shape are the only criteria, and these are differences of degree and not of kind. I know of no principle of fitting or draping that does not apply to comparable garments for both sexes. The shape of a man differs in detail from that of the female form, thus involving variation in the pattern; but these should be recognised for what they are—namely, differences in detail, not in principle.

In order to keep the matter within reasonable limits, the number of diagrams has been kept to a minimum: every figure, however, illustrates a step in the understanding of garment size and shape, and no point has been left without explanation. No particular method or system has been advocated: indeed, it will be plain that the groundwork here given can be applied to any good system. *An attempt has been made to look behind and beneath all garment systems to the principles they all, in their diverse ways, seek to apply.*

Throughout both volumes a teaching sequence has been observed: the designer is led from the simple to the advanced, from

the plain beginnings through graded exercises to the logical conclusion. Some garment-groupings admit of this technique to a greater degree than others, and the skirt and related leg garments may be taken as representative of this method. By a natural step-by-step approach to the problems of pattern-drawing a new method is here presented, and the questions of two generations of student-designers are answered. It will be found that a new and suggestive way of teaching the technology of the subject has been outlined.

Although the matter has been condensed within severe limits, no important issue has remained untouched, and the average designer will find that beyond what has been written, much more has been suggested: this should be exploited in his day-to-day practice.

My thanks are again due to Sidney Fryer, Director of Drescott Clothes, Ltd., for valuable help suggested by his experience as designer and teacher; and to Miss E. M. Batham for her understanding work on the manuscript and diagrams.

W. H. H.

Dudley and Staffordshire Technical College.
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INTRODUCTION

IN order to gain a clear and comprehensive knowledge of the principles of clothing design and their application to the various outer garments for women's and men's wear, it will be desirable to deal in a general and introductory way with dress, as such. By this means a mental background may be obtained, and matters discussed that are frequently taken for granted.

The Functions of a Garment

To begin at the beginning, we may ask why dress is worn at all. The answer is, of course, that, primarily, clothing is worn for the protection of the body against climatic conditions; and secondly, this clothing should possess decorative features that lift it above the level of mere utility. Clothing must not only protect, it must ornament the body; it should have an artistic content that will express the person and personality of the wearer in a desirable manner, and be fitting to the occasion of wear.

The distinction here made between the two functions of a garment may be illustrated by the words commonly used in this connection and the impression they make on the mind. To say that a person is well-clothed, is to stress the idea of adequate protection. If, however, we describe a lady as well-dressed, we imply not only that protection is ample, but also that there are present in the dress aesthetic values that raise the garment from mere clothing to dress. The first suggests weather, low temperature and flannel petticoats; the second would seem to emphasise quite a number of things that are of the mind. Clothing stresses the physical, dress the psychological, aspects of man and woman.

The art of garment design is confined, almost entirely, to the artistic and decorative aspects of dress, and is concerned only to a slight extent with its protective function. Seeing, however, that this latter function includes the texture and substance of fabrics, some general observations will be made.

The Evolution of Clothing

From the earliest times man has clothed himself with what lay nearest to his hand. His life was local, for he lived in a circumscribed world. In the colder regions the skin that protected the animal was procured for the clothing of man. In the tropics a garment of plaited grass may have been used, as being at once suitable and accessible.

The influence of woven fabrics on dress marks a decisive step forward. No longer was the garment limited to the shape and size of the skin of the chosen animal. When it became possible to procure the material for dress in unrestricted length, new possibilities were opened up: the age of drapery had begun. The earliest garments of woven fabrics were little more than lengths of material draped to form a covering and fastened about the shoulder with the fibula, or primitive brooch. The plaid of the Highlander is perhaps the truest survival of this early form of draped garment.

The Seam

The introduction of the seam to remove folds of excess material, which, in an entirely draped garment, would tend to restrict movement, may be regarded as a real advance. By means of the seam the shape of the garment could be brought nearer to the outline of the body. The earliest body garments which made any attempt to follow the contours of the body were sleeveless; there was just a slit or hole through which the arm could find free play. The sleeve, as a separate part of the dress, is a comparatively late arrival, produced probably by the necessity of protecting the arms while leaving them free for movement. The kimono of the East is possibly a survival of the time when the idea of the sleeve was emerging, and may be regarded as a halfway-house in sleeve development.

The bifurcation of leg dress would arise in a similar way and from the desire to preserve freedom of movement and retain protection.

The evolution of the shape of garments from the entirely draped to the completely fitting may best be visualised in the discovery and use of the seam as a means of fitting. The place of any

garment type may be fairly accurately placed in the evolution of dress by its seam arrangement. Even to-day, in the cape, the kilt and the plaid, to mention three garments almost devoid of shaping seams, we recognise survivals of quite early forms of dress.

It has been said that early man clothed himself with what lay nearest to his hands: he had only the resources of his own immediate locality. In the frigid zone, furs and fleeces; in the torrid belt, vegetable fibres; while the temperate countries would use the lighter animal fibres and the heavier vegetable products. The habit of travel and the interchange of commodities between adjacent peoples began a movement that to-day places man above his purely local supply. He may wear the furs and silks of other climates and send his own products in exchange. The dress fabrics of the whole world can be procured by all who would buy: Hudson Bay furs and silks of China and Persia meet in the dress ensemble of the Englishwoman.

Colour and Fabric Pattern

The evolution of dress on its purely decorative side has kept even step with the aesthetic progress of the race. The recognition that vivid colour meant more than did a neutral tone would be among the first means by which the mere covering took on a decorative value. A garment, even a crudely formed one, would be so much more interesting if treated with one of the brighter vegetable stains. The first attempts at pattern would follow natural forms and be quite crude in execution. Certain colours and patterns would be recognised as arousing more interest than neutral-tinted, patternless fabrics. Vivid colours and striking contrasts would predominate. Even to-day, the aesthetically-backward races indulge in crudities of colour and arrangement that offend those whose sense of tone is more highly developed.

It was with dress as with the other everyday things of early man. Even his pots and pans, his weapons and his sailing craft possessed a touch of decoration that lifted them above the plain utility value of the objects themselves. When it is considered how dress has, at all times, been used to emphasise and develop personal and social occasions; how it has buttressed rank and added to pomp and circumstance; its part in the pageantry of history and its adventitious aid in pointing human dignity and grace will be appreciated.

Forms of Dress.

Dress may be regarded as a true expression of human standards at any given time: the history of dress is the story of man expressing himself through that medium. Dress has meaning; every part of it stands for something. There have been periods when the art of dress has been under a cloud, when a sense of repression and consequent deadness seemed to pervade the garb of man and woman. At other times dress appears to have flowered in its brave use of colour and fabric and feature. A period of simplicity in forms of dress has succeeded an era when elaboration was taken to the point of extravagance. Indeed, there have been times when two strong and opposing trends flourished side by side and at the same period. So sensitive a register are the outer garments of man of his attitude to life and the world, that it could, perhaps, always have been said with truth, "the dress bespeaks the man".

Modern dress, like every other part of the impedimenta of life, does not exist *de novo*. No expert has sat down with the thought that here is nudity to be clothed and dressed; what is to be done about it? There has been a slow building-up and development of the dress forms we use and enjoy; and to this process man has contributed all that his ideas of practical utility could devise or his sense of beauty suggest.

If the observer, with some knowledge of historic costume, will make opportunity to frequent those places where dress, as dress, is worn, he will be struck by the number and diversity of dress ideas that will be found in a single ensemble. A dress feature dating back beyond the Middle Ages will harmonise, in a garment, with a feature of yesterday. Old forms will find new expressions. There is comparatively little new in dress: the restlessness which we call fashion is really the current combination of older and newer features within the limits of one ensemble. The pleat, for example, is as old as the art of weaving; the yoke is as recent as the eighteenth century: they are often used together. The forms and features of dress, then, are for ever being resolved into new combinations; and the congruity of any given fashion depends entirely on the harmony effected by the linking-up of the various features which form the common stock of the designer.

Fashion and Style

The type of dress current at any given time is the fashion of that season. To say that a garment is fashionable, however, is no guarantee that its artistic content is sound or sufficient. It will be the vogue, the fashion of the moment; and the history of dress is punctuated with examples of dress that have caught the popular taste, but which were lacking in both function and good taste. If taste in dress be broadly defined as a sense of the fitness of the garment to the wearer and to the occasion, many instances will at once occur to the mind in which this sense has been disregarded or outraged. The "cartwheel hat" (1908), for example, was fashionable at the same time as the "hobble skirt".

A garment should be stylish as well as fashionable. Fashion has been defined as "the spindrift of art, while style is of its very essence". A lady's Newmarket coat would certainly be regarded, by a competent judge, as a stylish garment, but it has not been fashionable since the nineties.

The student of clothing should cultivate a strong sense of style, if only to act as a corrective or restraining influence when dealing with exaggerated fashion features. Fashions recur or repeat, slightly modified in form perhaps, within a comparatively short period. Fashions in silhouette line and garment length frequently recur; fashions in style feature less frequently. The gigot sleeve, for instance, has recurred three times in the last forty years, its expressions changing at each recurrence.

Colours, too, recur in the cycle of fashion, but with no apparent regularity. Seldom, indeed, is current fashion restricted to one colour: usually the designers give two quite different groups of colours which are the vogue of the moment, with a third that is definitely of the season. All types of form and colouring are thus provided for.

Occasionally, but very infrequently, one colour will catch the imagination and for a season or so will be generally adopted. A few years ago, black, or black and white, was worn by ladies throughout Europe. The reasons possibly were that black is outside the range of colour, and that it conveys a suggestion of distinction in dress that cannot be given by colour of any kind.

Change of Fashion

Fashions change from season to season. The changes are seldom radical, but are, in themselves, sufficient to enable a garment to be "dated" by reference to colour, fabric, line or feature. Sometimes there is a period of very slight movement lasting over two or three seasons. At other times there will be intense restlessness season after season for several years until the movement has exhausted itself.

As an example of the first, it will be recalled that in 1929 the skirt (and consequently the jacket and coat) achieved the limit of abbreviation. While this shortness of skirt dominated the fashion world, little change could occur. The lapel and collar and cuff were the only points on which the designer could work. It was realised during that period how impossible it was to attempt any shapeliness of line, in silhouette or hem, without the necessary length of the garment to enable shape to be infused. It was only when the skirt and coat lengthened that a shaped silhouette became possible. A short garment is, perhaps, the one best calculated to stultify the efforts of the most imaginative designer.

As an instance of rapid and unexpected change in fashion, the flare effect may be given. It came midway in a season, and upset many calculations. From the straight, box-like silhouette, the flared hem to skirt and coat happened suddenly and dramatically. Every hem must be extended by shaped seam or inset godet. No living designer had cut such garments except in exaggerated form for theatrical use: the style as such did not appear in any technical work up to that time. The flare, in all its many forms, is now as much a part of our stock of dress features as is the pleat, one of the oldest of our forms. There are those who believe they can see, in fashion changes, the working out of some obscure evolutionary law; who can detect what have been called "periodicities" in the march of fashion. Given certain data as to colour, line, fabric and the like, over a number of years, they profess to be able to predict the next step.

In the more conservative realm of man's dress, where changes are slight and rather timid, the next step would be hard to predetermine, even where a definite tendency was strong and had been operating over a period. The point at which fashion will pause, even in an obvious trend, is very uncertain: it may progress with a

disarming regularity for a few seasons and then sharply turn—or bolt! Before any advance can be made in the direction of fashion prognostication it would be well to think on the points of view of the man and the woman in the matter of dress. It is probably not true that woman dresses “to please the other man and to annoy the other woman”; but it will be readily granted that whim and caprice do enter into this business of feminine fashions to an extent hardly realised by man, with his mere utilitarian ideas on dress.

It is this very element of caprice that has, up to now, baffled any attempt to measure up the domain of fashion “by geometric scale”. Too many psychological factors enter into the matter to permit of an art being reduced to a science.

The Changing Figure

There is the further reflection that, while the various types of male figure are practically static, the female form is influenced by the fashionable figure of the moment. There are, of course, fashions in figure, as there are in the dress that covers the figure. Within the last few years we have seen the bustless, boyish figure with thick waist and lean hips. Then the “slinky” form, which was really the previous figure adopting a languid, drooping attitude. Latterly, a more generous figure is the mode, shoulder is accentuated, some bust development expected and an upright stance demanded.

One of the best ways in which to visualise the changes in form that occur from season to season, is to compare a number of dummy figures, by Stockmann or other reputable maker, ranging over a period of eight to ten years. While no sensational change will be marked between consecutive figures, a comparison of dummy forms of five years' interval will illustrate the restlessness of form. The corsetry of any given season will reflect the fashion figure of that season.

Where Fashions Originate

Where do fashions originate? A silhouette, barrel-shaped, cylindrical or formed like an inverted convolvulus: hem straight or crooked or trailing: sleeves tight, or bulbous, or mannish: collars rucked or bolstered, trimmed or plain: seams few or many, single or in panelled pairs: cloths plain or patterned, rough or

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smooth: colours, burnt reds, all the greens of the field and forest—and of the billiard table. Whence do all these things emerge? Who gives the decisive word? Who decrees that the beret of the Basque peasant, or the boot of the Russian moujik, or the jumper of the seafaring man shall be worn?

Textile designers are ever seeking for new ideas for materials. While it is probably true that the textile manufacturer occasionally works on the suggestions of the dress designer, it is more true to say that the garment designer begins with the finished work of the fabric manufacturer. Fabric design and garment design each react to the stimuli and demands of the other.

If a little trouble be taken to examine the source of our system of dress, we are at once struck by its essential foreignness: nearly every brick in its structure bears a foreign mark. The names of the fabrics in common use suggest, in many instances, their foreign origin. So firmly is this foreign dominance seated and recognised, that it is now regarded as correct for even the products of British dress-fabric makers to be marketed under foreign names.

Not only does this apply to fabrics, but also to our forms of dress. Only a few of the dress terms in common use are English by derivation; the greater number are importations. Were the nomenclature of dress restricted to strictly English origins much of its glory would depart.

In colour, a similar tendency is noted. *Eau-de-nil* means much more to your dressy lady, as a colour, than could any exact translation. *Beige*, once a material in its undyed state, is now a colour which has only a slight resemblance to the hue of the fabric from which the name is derived. This exotic dress atmosphere appears to be appreciated to the point where it would be surrendered with reluctance.

The Model Garment

The European fashion houses produce their models in the form of actual garments. These are acquired by firms engaged in the production of mantles, costumes and frocks. The fashions for Spring and Summer are shown by the model houses in the preceding Autumn: those for Autumn and Winter during the previous Spring. The garments appearing as the latest fashions

in the showrooms in March have actually been in process of production, from model to finished garments, for some months.

Models may be copied in all particulars, or, which is more likely, used as suggestions of the trend of fashion. Not every continental model can be worn by English women: adaptation is nearly always necessary. Model garments have, so to speak, to be translated into English, modified to the national temperament, harmonised with the scene in which they will be worn. Our dress ideas, or primary designs, are, then, derived mainly from other countries, who, on the whole, well sustain their tradition of dress.

Dress ideas nowadays acknowledge few frontiers. Many distinctive forms of national costume have passed. For example, the typical Dutch dress has disappeared from general wear in Holland and is now worn only in those parts of the Netherlands frequented by foreign artists. While possibly there will always be national modifications of current fashion, the main features of costumes will tend, even more than now, to international similarity. Dress ideas cannot contract out of the trend towards internationalism that has characterised almost every form of human usage and commodity.

How the Model is Used in Production

Fashions are not always disseminated by model garments. Photographs, drawings, written descriptions and leno shapes are also used. These are not so expensive as the actual model garment.

The use to which any of these means is put will naturally vary with the practice of the firm using them. The designer will have before him the general lines and the special features of the next season's garments. The materials to be employed will have been selected, and colours and texture decided on. Thus the various factors involved in the production of a set of sample garments group themselves; and the work of the factory designer consists in interpreting all these factors in terms of his clients' requirements. A firm knows these requirements—and they differ greatly as between one firm and another. It will design only those garments that will sell in its own market.

From a few models a whole range of sample garments will be produced. Variations of style feature will be made, while the

main fashion notes of the season will be common to all. There will be a strong "family likeness" between all the numbers in a collection of samples. They will all obviously belong to the same season, but there will be a wide diversity of detail based on current vogue.

The factory designer thinks in terms of form types and sizes, rather than of individuals. Given a definite figure and unrestricted choice of materials and colours, design would not present many difficulties. To interpret the current fashion in a wide variety of sizes and fittings, each of which must be treated on its merits, is a rather different and complicated matter. The lines and features that are right for the conventional stock W size could not be applied without considerable modification to the petite or outsize figures. Further, designs demanding an excessive amount of material or high making-costs have fewer commercial possibilities.

The work of the designer, then, is to produce garments that are fashionable, pleasing to his clientele, and saleable; getting his effects with a minimum of material and labour costs.

The Principles Involved

It is, of course, generally realised that in the design of dress, as of any other commodity, certain principles are involved. Effects in appearance are traceable to causes in design. The good points of physique can be emphasised or accented by careful design, and defects of build or form toned down or obscured. The eye can be pleased by lines arranged in certain combinations and directions and offended by other arrangements.

Women of specific types of figure may not successfully wear certain fabrics, or colours, or fabric patterns; other types demand the exercise of great skill and care in the arrangement of features within the garment itself. A cape effect that may be very becoming on the slim woman would be almost laughable on an XOS figure.

All these examples are generally realised, and seldom is a really glaring instance of bad design met with. But in any collection of fashionable garments obvious weaknesses in design may be detected, points that would not have appeared had there been at work a mind appreciative of the general principles involved and trained in their correct application.

It is important, therefore, that the training of the garment designer should be such as to fit him for the task of clothing and dressing his clients: both protective and decorative values are involved. The first requirement is a sound knowledge of the technology of his subject: acquaintance with making processes; a thorough grasp of human proportions in their normal and abnormal forms; ability to measure correctly and observe accurately; the draftsmanship necessary to transfer these data to a pattern; imagination in arranging style features. Given this groundwork, artistic skill can operate.

No opportunity should be missed of seeing dress at its best; of frequenting those places and functions where garments have, and are intended to have, social and personal significance.

The dress of other peoples and other times, too, will be found to be one of the most satisfying studies in its wide suggestiveness. The contribution that historic costume has made to modern fashion has been both direct and indirect: direct, in that we see in recent garments features from other times adapted to current requirements; indirect, through the richer cultural background of the designer who has made this subject his special study. This will apply with greater force to the producer of women's wear; but the designer of men's clothing may not neglect it.

In the clothing industry it is especially true that no design can be better than its creator: "no river can rise higher than its source".

CHAPTER I

FIRST PRINCIPLES

The pattern-maker stands to his drafting-board. Before him lies a piece of flat paper: out of this he is to make his pattern. He has beside him a number of measurements, and in his mind there is an exact idea of the figure he is drafting for; how it stands and moves, its posture and action. On to that sheet of pattern paper he will place certain lines and many points: these points and lines will give the size and shape of the form. Other lesser considerations will, of course, arise during the process, but size and shape are paramount.

Two Types of Pattern

He may be making a basic pattern, embodying only the measurements, placing the anatomical points, and not concerning himself with style features of any kind. This is the type of pattern which faithfully reproduces the part of the body to be clothed, and which can be used as a base, or starting-point, for a later garment pattern. It is a true and tested base on which any sartorial superstructure may be reared; into which any style features may be introduced.

On the other hand, he may be using the base pattern as a starting-point or foundation for a garment pattern to a given style, a drawing of which he has before him. All his fitting points are fixed, and on these he will impose his style. There will be tucked features here and pleats there; beyond that centre-front line he will draw something new in fronts or lapels. From this kind of pattern the garment is eventually cut. Seams or turnings will be allowed on this pattern, and upturns, inlays, etc.: apart from these necessary allowances, it is a replica of the garment in flat paper. The shape of the garment is provided for in the pattern; it will be actually put into the garment in the making-rooms.

These two different types of pattern indicate the two different approaches to his task made by the pattern-cutter. The first calls for a sound knowledge of the human form in its infinite

variety of size and shape and development; the second for good draftsmanship, a sense of line, and a wealth of acquaintance with the dress forms, features, and details which are the stock-in-trade of the successful designer.

A different mental approach is needed in every branch of design. In men's garments, restraint and soundness; for women's wear, much natural feeling for dress and a relish for mild adventure; in work clothes, service and fitness for function; in garments for juniors, utility and simplicity. This indicates that good technique is not, of itself, enough; there must be a correct mental attitude to the type of design in hand.

Systems of Pattern-making

The basis of the whole matter is, however, highly technical. As soon as measurements are transferred from the size-card to the sheet of pattern paper before him, the designer is committed to a method, or, as it is called in the industry, a system. The clothing industry has been prolific in systematic methods of applying measurements and descriptive data, and it is fair to say that in many of these pattern systems the principles involved have not been too obvious, or even clearly stated. Many years of study of English, American, and European pattern systems suggest that method may be unrelated to, or divorced from, principle. The widest variations exist in that large group of systems which not only do not state the principles applied, but which seem to proceed on the assumption that none exists, and that the whole operation is empirical.

At the beginning let it be said that the word system connotes something soundly based and rooted in reason, capable of being demonstrated and the results applied. If a point is fixed, or a part located for a sound reason, that reason can and should be given. If the working of a law is detected in a number of similar instances, that law should be capable of statement and proof. Should the limits of present knowledge be reached and any part of the pattern has to be decided empirically, it should be so stated. By following this practice the whole operation becomes intelligent and certain, because basic laws and first principles of fitting are being recognised.

Types of Manufacture

The pattern-maker will also have other problems in mind. One of the greatest of these concerns manufacture: a garment has not only to be designed and cut, it has to be made—and methods of making-up vary greatly. Even to-day, when making processes are being standardised, the methods of manufacture of firms making similar garments vary widely. In one, machine processes will dominate; in another, some approximation to craft standards will obtain. The same garment, cut from the same pattern, would therefore be actually different in important fitting respects if given a different type of make. For example, the all-machine make demands a “straighter” shoulder than does the semi-craft make, with its modicum of manipulation and shoulder/breast shaping. The differences in make must, therefore, be taken into account in the making of the pattern, and the draftsman will conform to the type of manufacture of his own firm.

A related point should be discussed here: the different points of view of the bespoke or custom tailor, with his craft standards of make, and of the wholesale ready-to-wear manufacturer backed by factory manufacture and handling his products in bulk.

The bespoke trade regards each customer as an individual, with peculiar features of size, shape, and requirement which are to be regarded individually. The type is not considered, the stock size-card is disregarded: just a solitary person unrelated to all other persons, needing much fitting, making unique demands.

The wholesale stock trade cannot so regard the matter, but groups individuals under the heading of types. The type, not the individual, is studied, and all the features of form, size, and requirement of a particular type are carefully studied and catered for.

This difference is fundamental, and the two points of view are entirely apart and almost mutually exclusive. They may be said to touch in a somewhat loose way in the special measure garment, which has features similar to the bespoke routine (e.g., individual measurement and, perhaps, fitting) and points of similarity with the stock-size approach (e.g., bulk-production, in which individual requirement is subordinated).

The evolution of methods of clothing manufacture is towards the more extended use of machinery, the greater utilisation of quickly-trained labour, conveyor-belt methods and greater subdivision of the operations and processes through which a garment passes. The pattern-maker, therefore, will note this position, and cut his pattern on the assumption that whatever of form, or modelling, or individuality is needed in the garment must first be in the pattern.

Seam Allowances

A further important matter is the pattern allowance for turnings or seams. These must, of course, be on the actual garment pattern: they will vary in size from $\frac{1}{4}$ in. to $\frac{3}{4}$ in., dependent on the part of the garment and the type of material. The point to be decided by the pattern-maker, however, is whether he will include seams while working out his pattern quantities by system, or make his pattern to net size. Some systems take seams into account, others disregard them. Here usage and trade convention will count for something. It is usual to include seam allowances in pattern systems for men's garments where the few vertical seams are used only for fitting purposes and not as decorative features. So long as seam allowances are regarded as something added, and not as part of the actual application of measurements to the pattern, there would appear to be no reason why they should not be so included.

In a pattern of a complicated garment, however, where vertical seams are often numerous because used as style features, as is the case in much women's wear, then it would be well to draft the pattern without allowances for turnings, and to add these small quantities afterwards, wherever required. *The rule should be safety and simplicity of working*, while keeping in mind the trade convention of seam allowances within the working of the system in patterns for men's garments; and the net pattern, without turnings, for women's garments of complex seam arrangement.

It cannot be too often stressed that seams or turnings are put into a garment for convenience of manufacture, and have absolutely no place in the size of the garment. When a garment is finished all allowances for turnings and seams have disappeared: they have fulfilled their only function, that of holding together the garment parts.

Measurement

Before proceeding to the main ground of this work—namely, the detailed application of measurement and data in a systematic form—it will be necessary to limit and define the task before us. It is recognised that all data taken will fall into two groupings: the first concerned with the body, the second with the garment.

The body measurements will be those which assess the anatomical structure: the net girths of breast, bust, waist, hip, etc.; the exact distances between important constructional points; the point-to-point measurement which must be correctly put into the basic structure of the pattern.

The style or fashion measurements are those which are concerned with the style features of the garment only: they include such data as enable these features to be fixed with accuracy. All garment lengths fall within this category. A woman will remain the same height for half a lifetime, but the lengths of jacket, skirt, over-garment, etc., will change with every variation of fashion. A man's arm and leg will not change in their girths over a number of years, but his sleeve and trouser leg will increase or decrease in width with the evolution of style.

Style or fashion data are important: they must be embodied in the pattern, but only after the physical groundwork has been secured. They are added to, and superimposed on, the anatomical basis planned by the application of the body measurements. It is proposed, therefore, to keep these two kinds of data quite separate in their application.

Body data concern themselves with the size-card only: they will secure size, balance, and shape. Systematic application of measurements concerns itself only with the application of these data; and it will simplify the task and make for clear thinking if these are given first place and importance.

Fashion measurements have to do entirely with the artistic side of pattern-making. They demand good drawing and a sound sense of line and good proportion; but they must be regarded as something to be arranged after, and added to, the correct physical basis. This distinction lies at the root of good draftsmanship: in the past they have often been confused, their respective limits not recognised, their boundaries blurred or overlaid. In the interests of clarity, which must be the keynote

of successful teaching, the student should be trained from the beginning to make this vital distinction.

The point has been reached where the limitations of each of these aspects of the task can be appreciated. To state the matter formally they may be separated into groupings:

1. *The body measures*, and scales derived from them, will fix:

- (a) all girths and tolerances, in all sizes;
- (b) the size and shape of the shoulder section of the pattern;
- (c) the size and position of the armhole (scye) in the garment—this will include front of scye, depth of scye from neck, height of shoulder end above scye base, and girth of scye;
- (d) the size of the neck of the garment and the fitting of the upper thorax;
- (e) the relation of the sleeve to the arm and to the scye;
- (f) the quantities for fork and seat in leg garments.

2. *The style, or fashion, measures* will fix:

- (a) lengths of all body garments, and of women's skirts;
- (b) type and size of the front of a garment;
- (c) position and size of all pockets, yokes, feature groupings, etc.;
- (d) widths of sleeves, leg garments, etc.;
- (e) all vents, pleats, openings, fastenings, etc.

No differentiation is made between garments for the two sexes. Both men and women have form and size, and the same principles of fitting and draping apply to both. A pair of slacks for a man will embody certain principles: a pair for a woman will be similarly based. The same may be said of the coat group of garments. The older view, that a different set of basic laws applies to the making of men's and women's garment patterns, is passing away: this is almost certainly due to the adoption by women of the fitting qualities in the coat group so long regarded as essentially masculine. It is, however, true that in dressy frocks and gowns the decorative aspects completely outweigh mere form-fitting.

One further thing should now be said. No method or system of applying measurements is foolproof: any system presupposes a man capable of getting the best results by applying it with

reason and common sense. A lifetime spent among clothing, bespoke and wholesale, and as a teacher for many years, has brought experiences which urge that this point shall be put succinctly: any system is an attempt to apply the principles of form-fitting. These are known and demand intelligence in their application: nothing in the design of clothing is automatic. The student should, therefore, learn his basic principles, and practise their application to an increasing number and variety of garments and dress features. In this way a soundness of procedure will be acquired, and facility will come with practice.

This is emphasised by the practice of the best houses in the dress industry. When a first pattern has been made, a trial garment will be lightly put together and fitted to an appropriate figure. Minor modifications, involving sometimes even minute details, are made to improve the garment in some particular way. This process will be repeated until static perfection has been reached. The pattern has been altered very slightly here and there at each successive trial fitting; and if the resultant pattern is compared with the first, the differences will appear very small and, perhaps, to the uncritical, unimportant. But these variations do show the margin between the first pattern and the finished tested pattern; and while this margin has become smaller and narrower as the science of form-fitting has been developed, it is never likely to disappear. No basic system can entirely rule out these subsequent modifications, dependent as they are mainly on the behaviour of the chosen material during manufacture into garments: it can be claimed, however, that a sound system of applying body data, embodying the known laws of form-fitting, will enable the pattern-maker to approach his task with confidence in the result.

CHAPTER II

THE SEAM AND ITS EQUIVALENTS

The materials of which clothing is made are woven fabrics, made to various widths (single or double) and in pieces of varying length. It is obvious that these materials will be flat and without shape. To produce a shapely garment from a shapeless fabric is the basic problem in all garment design.

The normal method of creating shape in a garment is by the use of the seam. The more draped and less fitting a garment is, the fewer seams are required—*e.g.*, the cape. The more fitting and less draped the garment, the more seams will be needed—*e.g.*, the bodice. The chief function of the seam, then, is to create shape.

The surface of the body is not flat: it presents a series of greater or lesser concavities and convexities. The fabrics used to clothe the body are not woven in convex or concave shapes, but flat. *The problem, therefore, is, how to arrange the seams of a garment that the required shape is created.*

The problem is modified by the following considerations.

Few garments fit the body in every part. Even in those parts of the body where a garment is required to fit, the fit is not exact and absolute—*i.e.*, it does not “fit like a skin”. The fact that garments may be correctly described as “fitting” or “semi-fitting” recognises degrees of closeness of fit. Even in the control section of a body garment the fit may be “close”, “easy”, “generous”, etc. The term “fitting”, therefore, is capable of application in varying degrees.

Manipulation of the fabric may be regarded as a possible alternative to the seam in the infusion of shape into the garment. By manipulation is meant the stretching, shrinking or drawing-in of any part of the garment so that it is more nearly shaped to the surface of the body.

When garments were made throughout by craftsmen it was possible to ensure that all the required manipulation was secured. It was, indeed, in this shaping and manipulation that the essence

of craftsmanship lay. Sectional manufacture, however, has meant standardised manufacture, and it is not possible to secure any great amount of manipulation by the factory method of production. Whereas, under the craft system of making clothing, less was demanded of the cutter and more of the tailor, under the factory system little is demanded of the operator beyond standardised operation, but much is demanded of the designer. He must endeavour to secure as many as possible of the effects of manipulation by means of a careful placing of seams. What the old-time tailor achieved by his manipulative skill must now be attempted by the designer.

As an example of the alternatives in the use of a seam for manipulation, the back shoulder may be taken as simple and typical. The shaping of the back of the coat to fit the back of the figure may be done in two ways, firstly by easing excess length of back on to the front at the shoulder-seam, or, secondly, by using a panel seam from which a moderate suppression is taken, from nothing at the blade-prominence to, say, $\frac{3}{4}$ in. at the shoulder. In each case shape will be secured, and the garment will be more nearly fitting than if neither of these alternatives had been adopted.

Seams (of various kinds) are frequently used in women's garments for purposes of style. In men's garments seam placings are as static and conventional as men's fashions; but in all descriptions of women's wear the seam is often employed to secure fashion effects that would be difficult to obtain by other means. A seam placement, therefore, may be dictated by the vogue of the moment, but the skilful designer will turn these fashion seams into means of creating "line" and shape that would be otherwise impossible. Two simple examples are the use of the seams afforded by inset vertical panels in coats and jackets, and the use of the pintuck in "rayed" groupings to create shape at the front and back-neck of dresses.

There are few lateral seam placings at the disposal of the designer. The conventional arrangements are practically all vertical. So long as an appearance of slenderness is desired by women, so long will the designer be committed to vertical arrangements. The yoke, in shoulder and hip, is perhaps the notable exception; but even the yoke is seldom without its transition lines. In dresses, horizontal or diagonal seams may be introduced in order to obtain flared effects. It will be seen, there-

fore, that lateral seam placings afford but few and small opportunities of creating shape.

The new fashions of each season bring some modification of previous seam arrangements. In those garments where good design is of first importance, seam placings are so constantly changing that general rules, beyond those considered above, would be of little value. *Opportunity should be made, in all practical work, of using all possible seams in a drawn pattern to secure the shape effects desired.*

The Seam for Use and Decoration.

In the beginning all garments draped the form: they were lengths of woven fabric loosely thrown around the body, giving protection, but impeding movement. The first attempts at fitting would be to pin the excess material into pleats, which would prove bulky and inconvenient, particularly under the arms and between the legs, in riding, walking and in warfare. The next step would be to cut away the pleated material and to sew together the cut edges of the fabric: thus we have the seam.

The seam is almost the oldest, and certainly the best, of our fitting devices: the man who first thought of the idea built bigger than he knew. He made it possible to use the widest range of fabrics, in garments shaped to man's own design, not willed upon him by the limits of his material. The modern designer regards the seam as his greatest asset, and has exploited it to the limit of his inventiveness. The idea of the seam is, however, wider even than its sartorial uses: so much has it become part of our speech and of the common stock of things that the great Oxford Dictionary devotes one yard, one foot, one inch of small type to its many and varied meanings and definitions.

The seam may be used as a decorative feature, and its position and direction are then decided mainly by its ornamental function; but in every case of decorative use, it should also combine its primary function of modelling or shaping.

- A *long seam* runs through the garment from top to hem—e.g., the panel seam in a woman's jacket.

A *short seam* or *dart* will terminate in the interior of a garment—e.g., the underarm dart.

A "*fish*" is a seam both ends of which terminate within the

garment—*e.g.*, the underbust seam. Sometimes used in small groups to grade and distribute the effect.

A *pleat*, one end of which is secured—*e.g.*, in a trousers top—may be used as an alternative of the formal seam.

The *pintuck*, used singly or in groups, or any related tuck, is also a variant.

The position of seams will vary from garment to garment; but in any one of them it can be said that convention decides the matter, and that these conventions have been formed over a long period of trial and error, and have fixed the seams in those parts which control the fitting. To create shape, a seam must traverse those parts where shape is needed, over prominences, through hollows. Flatness is dullness and monotony: nature gave convexities and concavities to the body; the designer must do the like to the garment.

The value of a curved seam is measured by its relation to a chord drawn between its two ends, *e.g.*, the curve of a back sleeve seam is computed by a straight line drawn from where the seam joins the scye to the back cuff.

The curve of this seam is similar in both the top sleeve and the under sleeve. This must be so in this case because a tubular sleeve is being formed. There are, however, parts of the garment where the two sides of a seam have different degrees of curve, *e.g.*, the side seam of a street coat. The side seam of the forepart will be shaped to reflect the shape of the side hip, but the back, which must be sewn to this part, is often cut with very little curve value. This would appear to be unsound both from the fitting and making-up points of view. Unless there is some very sound reason to the contrary, both sides of a straight seam should be of similar shape and curve value.

Seam Direction.

The direction taken by a seam has a keen suggestiveness in design, and the subject has been adequately dealt with in the author's "Principles of Dress Design". One new example, however, may be given here, because it shows the two-fold use of the seam. The side body seam of a man's dress coat is the upward continuation of the skirt pleat, and after passing over the blade prominence turns sharply into the back scye at A

(Fig. 1). Blade shape is secured by a suppression below and by removing about $\frac{1}{2}$ in. at the scye end of the seam. The same fitting effect could have been got by running the seam into the shoulder at *B*, as would have happened in a woman's jacket with a "panel" back. Why then is the traditional seam placement maintained? The answer is that the seam direction to *A* suggests a broad shoulder spread so desired by a man, while seam line *BCD* suggests length and nothing more: therefore *A* maintains its vogue.

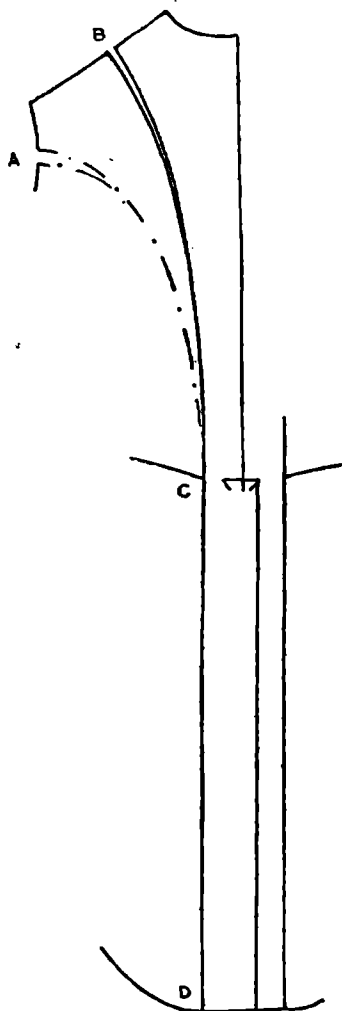


FIG. 1.

The Alternatives of the Seam.

There are many parts of a garment where a formal seam would be inconvenient from both utility and suitability. It is often desired to get the fitting effects of a seam without actually cutting into the garment and sewing up again. The following representative examples illustrate varieties of method and include both men's and women's garment styles.

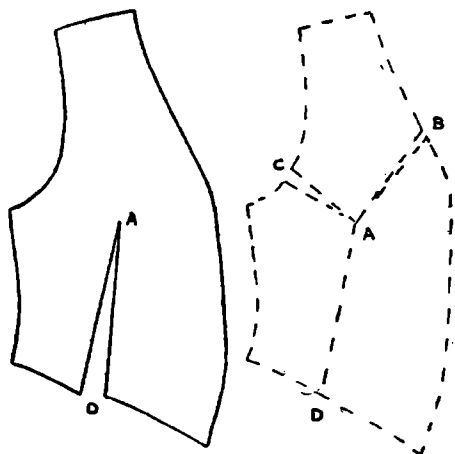


FIG. 2.

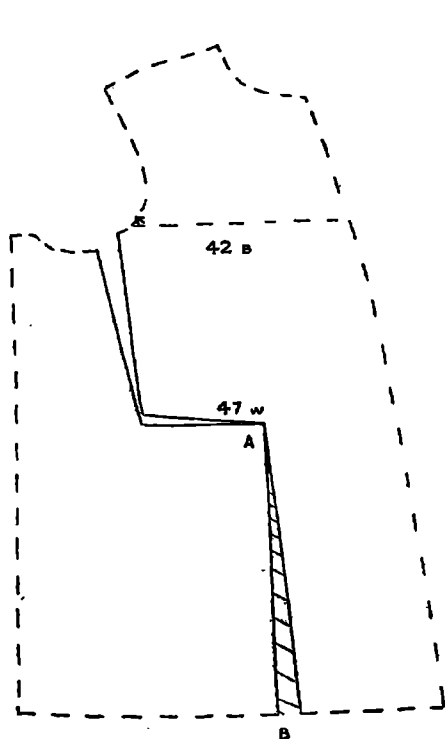


FIG. 3.

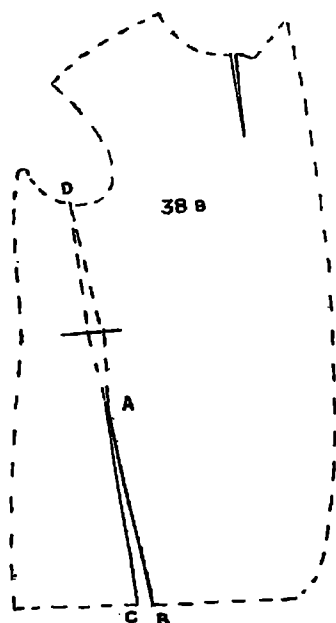


FIG. 4.

One Seam does the Work of Three.

The man's vest is a fitting garment: it should conform to the convex shape of the part of the trunk it covers. The flat piece of fabric forming the garment front has therefore to be shaped to harmonise (Fig. 2).

This garment usually has a conventional seam running from hem to breast DA . If the pattern be cut up this line and folded over at B and C the resultant pattern shape shows dart AD opened at the hem. When this has been sewn up during making, the garment front is

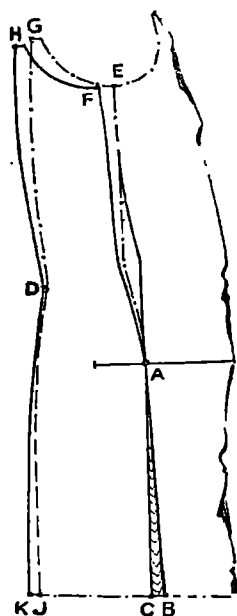


FIG. 5.

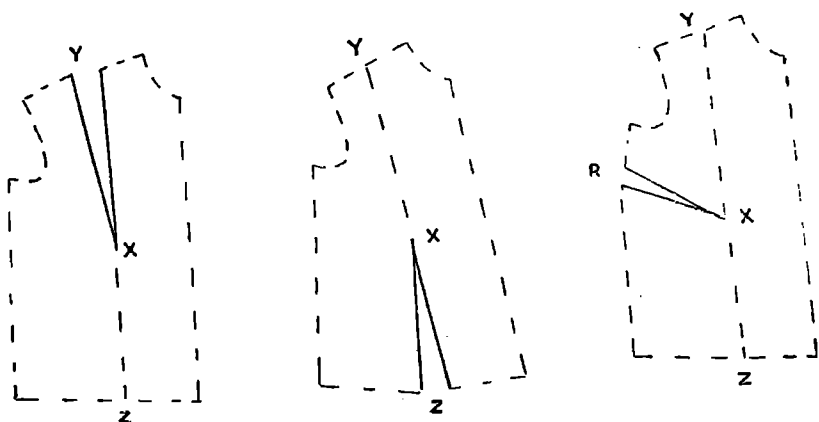


FIG. 6.

convex in shape, having the modelling secured by lines CA , BA , and DA ; yet only one seam has been used to obtain the effect of three.

In a woman's vest there is more reason to use this method of shaping: the front of the female trunk has a greater or lesser bust prominence, the shape of which may be reproduced in the garment by the use of one seam doing the work of three.

Hem Reduction for Fitting.

The hem may need to be reduced for purposes of fitting. The sac or overgarment for a fat man has, in the flat pattern, a hem

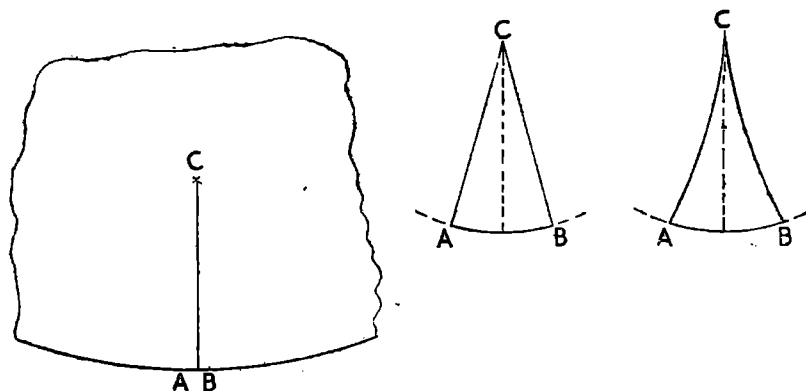


FIG. 7.

corresponding to the girth of the abdomen. This obviously needs reduction, and the method usually employed is the Donlon Wedge *AB* (Fig. 3). Here the vertical underarm dart and the lateral pocket mouth are used: the diagram shows the pattern of the front after the pattern has been folded over at *B*. The dart and pocket are now displaced: when the garment is sewn together the appropriate shape of coat front for this type of figure has been secured, without a local seam, but by using adjacent seams for the purpose.

Hem Reduction for Style.

Where the hem has to be reduced to secure a style effect it can be done by taking advantage of any adjacent seam for the purpose. The barrel-hip man's sac is an example. The pattern (Fig. 4) is cut up line *AB*, and folded over *CB*. Thus shape has been secured in the hip section by using the underarm dart. Size, however, must be restored. This is done by adding (Fig. 5) at *JK* a slightly less amount than has been removed at *BC*.

To obtain the same effect by means of a "long" seam from scye to hem would be to put a side-body piece into a sac: this would deprive such a garment of its characteristic style.

Change of Seam Position.

The shape needed for bust may be obtained by a variety of seams or their equivalents. Fig. 6 shows how an identical result can be secured by seams variously placed. The shape may be provided by *XZ*, a side dart *RX*, or by a seam running right through the front *YXZ*.

Alternatives to these plain seams may be pleats, groups of tucks, or gathered effects.

The pattern of the forepart can be drafted in any of these forms. The centre-front line is identical in the three types, and will be regarded as the static line from which the front neck-point is located.

Extension of Hem by Vertical Seam.

The inset godet affords a simple example of the extension of a hem by the use of short seams. The hem would be cut at *AB* (Fig. 7) and up to *C*. The inserted feature may be straight-

sided giving an almost geometrical line, or may be curved, resulting in a fluted effect. If the latter form is used the curved side of the godet should be slightly strained out to improve the line effect.

Fig. 8 shows a simple application of the inset godet to the front of a frock.

Hem Extension for (a) Style and (b) Drapery.

A simple example of (a) is the loose-fitting over-garment for man or woman. The pattern as drafted gives a certain hem-width, because it is drawn in a rectangle of a width of half the breast plus tolerance. *The drapery which gives the added hem width may not be put in anywhere: it must be localised to those*

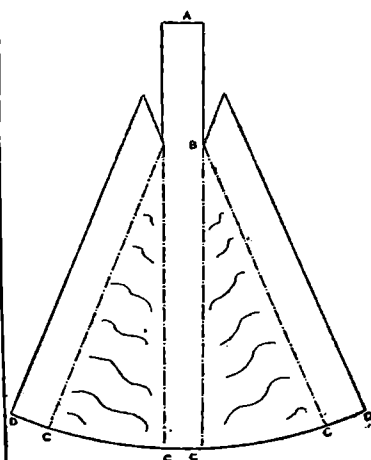
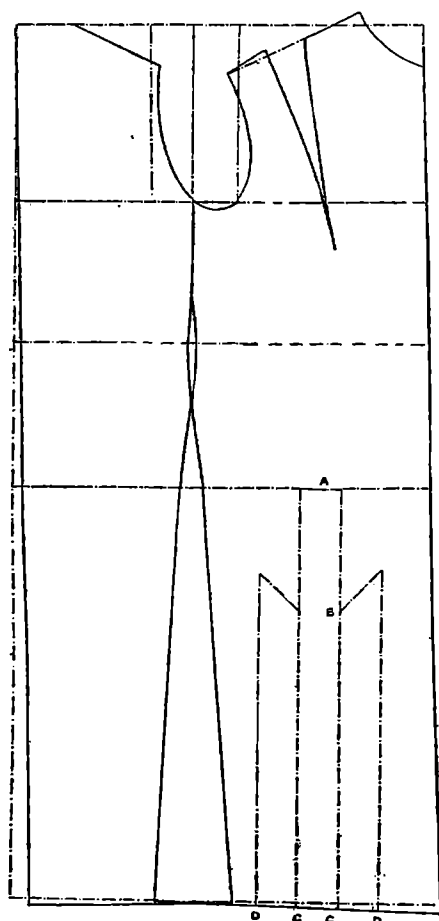


FIG. 8.

vertical lines where it can be controlled and where it is needed. The extra material may not be left on the centre front or on the centre back, but must be on those vertical anatomical lines where material would be removed in a close-fitting garment — namely, downwards from the blade prominence in the back, from the breast/bust in the front, and from the base of scye downwards at the side. These three lines are the natural vertical fitting lines of the figure, and may be regarded as the ideal draping lines in the garment.

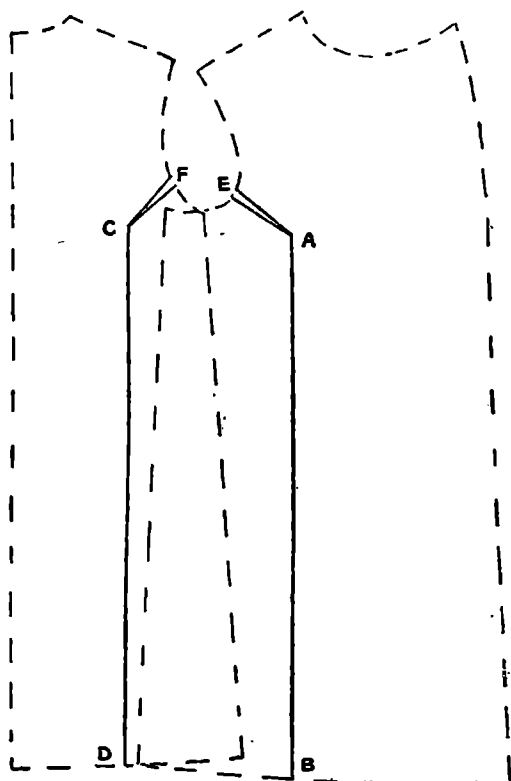


FIG. 9.

The overlaying of back and front at the sideseam would merely localise all the drapery in one place. It must be distributed by the method shown in Fig. 9. The pattern is cut up in lines *BA* and *DC*: the desired amount of extension will be put in at *B* and *D*, pivoting on *A* and *C*. This will demand the cutting of the pattern *E* to *A* and *F* to *C*, and overlaying at *F* and *E*. The consequent shortening of the back and front of the scye should be controlled by staying in manufacture, thus securing that the drapery is retained in the garment where it was arranged in the pattern.

*The sideseam should not be overlaid at the hem by a greater amount than is extended at *B* and *D*.*

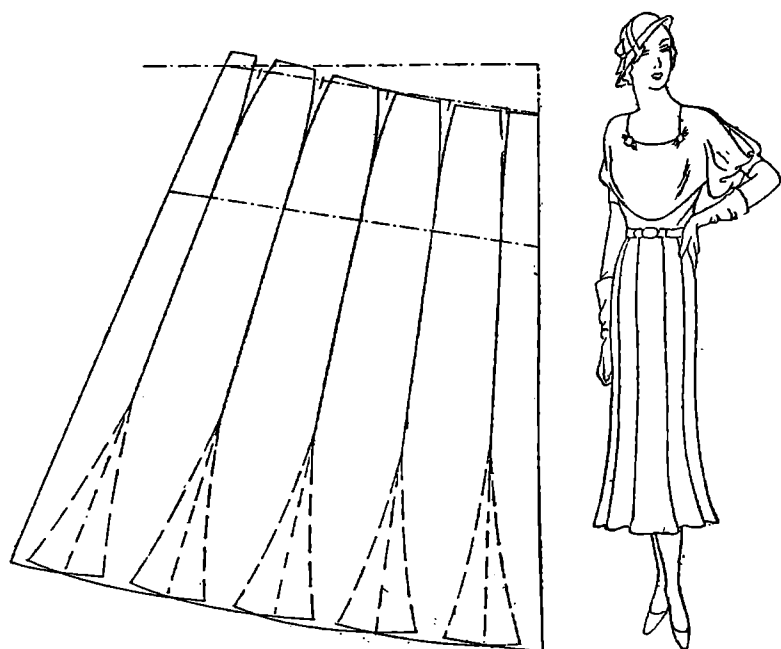


FIG. 10.

Lines *AB*, *CD*, *EA*, and *FC* have all given the result of a seam without the actual cutting of the back and front.

Fig. 10 shows as an example of (*b*) hem-extension in a ten-gore skirt of calf length, where long seams are fluted from knee to hem.

Extension of Hem by Lateral Seam.

The alternative method of hem extension is by the use of a lateral, instead of a vertical, seam. The amount and locality of the extension will be marked (Fig. 11) at *JKLM*. The pattern will then be cut up on these lines and opened the agreed amount. This will give a curve to the lateral line *AB*. This curved line is always joined to a garment part which has a straight, or less curved, joining line. The drapery is thus controlled within its desired position; and the effect of a series of inset godets is obtained without a vertical seam being used.

Fig. 12 applies the principle in a self-explanatory way to a

skirt in which flared effects are arranged on lines AC and BD from the hip-yoke to the hem.

Fig. 13 shows its application to the drafted pattern of a flared dress.

Pleatings.

Consider a kilted skirt. Here a succession of knife-pleats occurs regularly round the skirt. When the wearer stands still

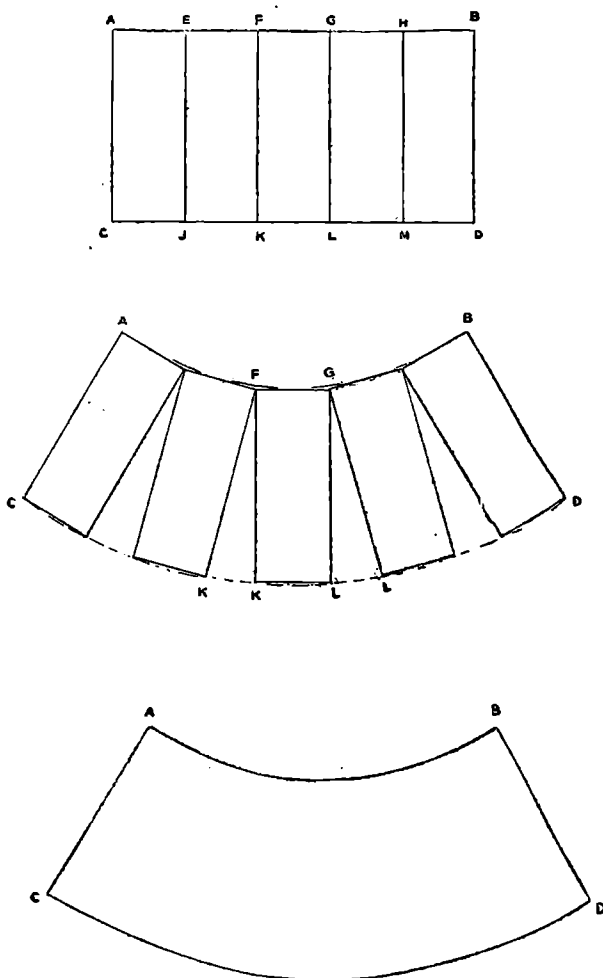


FIG. 11.

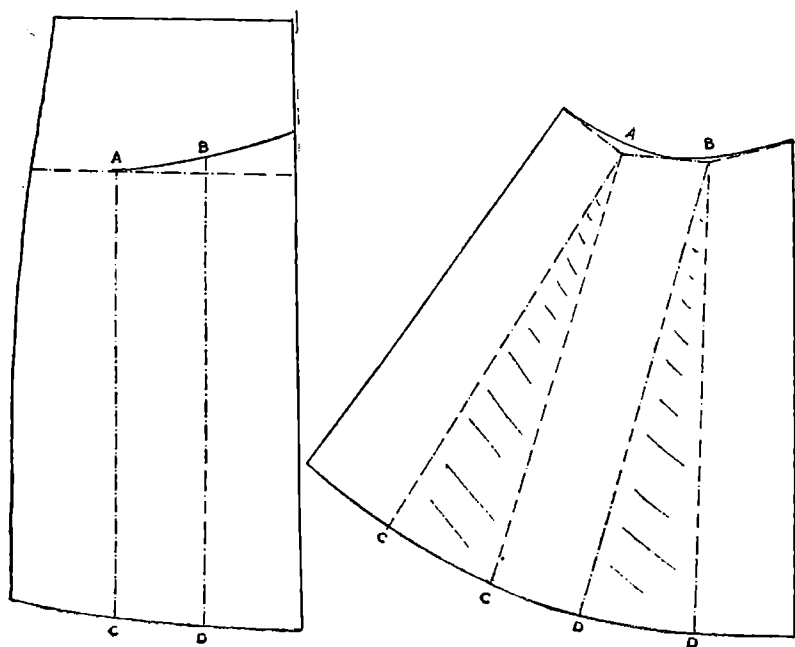


FIG. 12.

the garment hangs straight and smooth; the outline effect is that of a cylinder. When the woman moves, however, the pleats open and permit of the freest leg movement. To arrange this effect without pleats would mean providing a very wide hem without the possibility of hiding or controlling the excess drapery. In the pleated skirt, then, the drapery is present, obscured in its pleat during inaction, but available for service on the slightest movement of the legs.

A hem width of two yards will pleat into one yard, giving a very straight silhouette when undisturbed, but a definitely fluted line when action makes its demands. The plain knife-pleat, running through a garment from top to hem, has the design advantage of a seam, and may be regarded as its simplest equivalent.

Pleats may include:

The single knife-pleat.

The box-pleat, outside or inverted.

Pleats in series.

The *size of a pleat* will be the total amount of material contained in the complete fold.

A pleat may be pressed flat, or left to drape as a "soft" pleat.

Fig. 14 shows the elevation and section of the following arrangements of pleating:

- (i) Three single knife-pleats, evenly spaced, repeated in reverse;

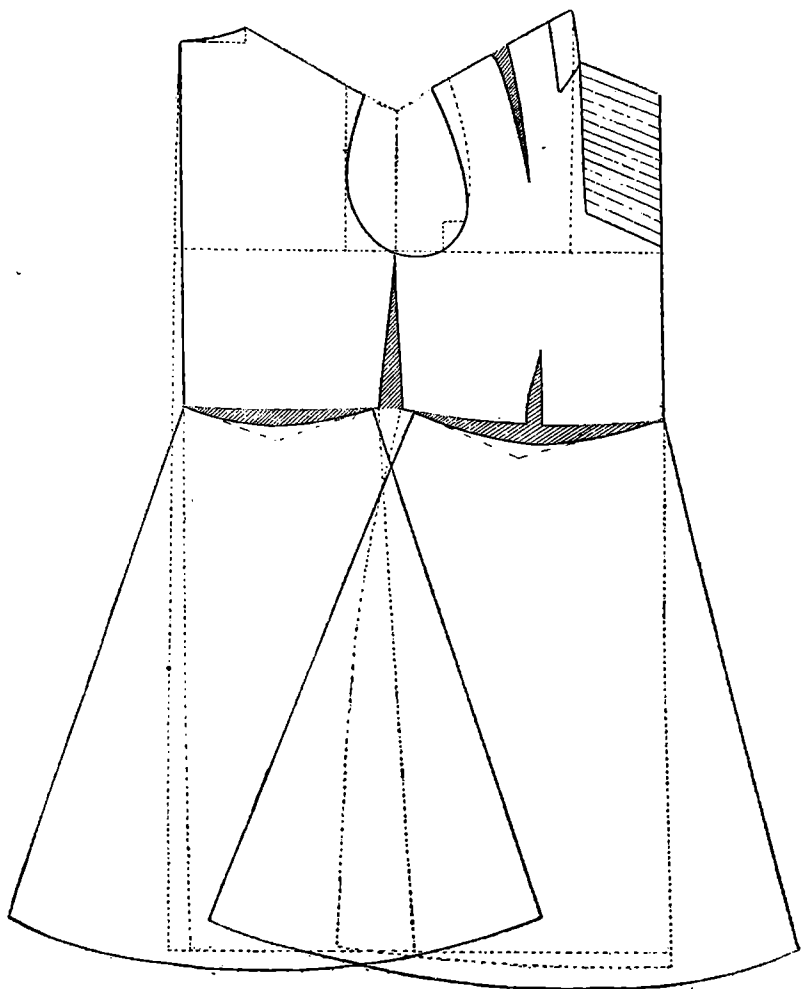


FIG. 13.

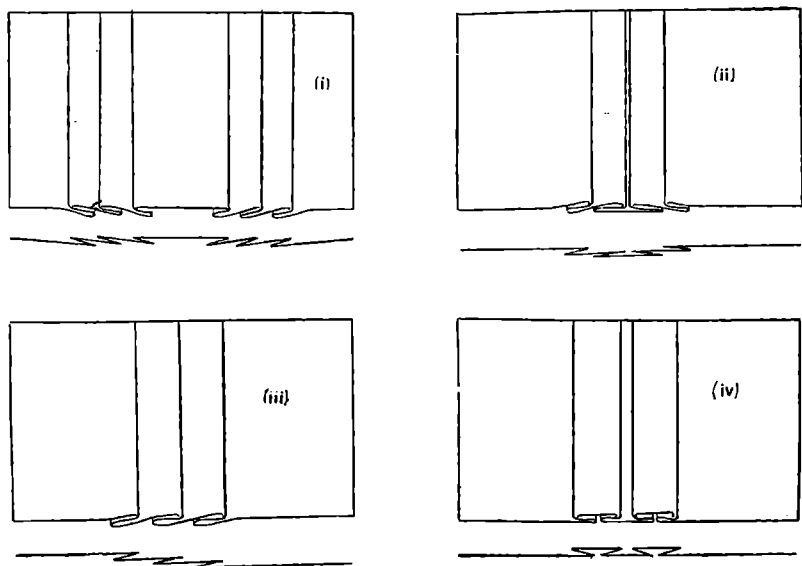


FIG. 14.

- (ii) Two knife pleats forming inverted box-pleat, with other supporting knife-pleats;
- (iii) Three knife-pleats arranged in series;
- (iv) Two outside box-pleats.

Fig. 15.—The arrangement of isolated box-pleating, from hip-yoke to hem, is shown.

Fig. 16.—A panel of knife-pleats, with a sewn box-pleat above, illustrates the allowances that are made to secure this effect.

Fig. 17.—Two knife (or, alternatively, box) pleats arranged in the front of women's sports shorts.

Besides these more orthodox tailored pleats, which are within the competence of all women's wear manufacturers, there is a wide variety of *smaller close pleatings* which demand special pleating machinery for their arrangement: an example is the "sun-ray" pleat. These closer pleatings are successful only on the lighter weights of dress materials, and should not be attempted on the heavier cloths which require substantial pleats to serve their function and to retain their shape. The keen designer will keep himself informed of the large, and growing, number of these

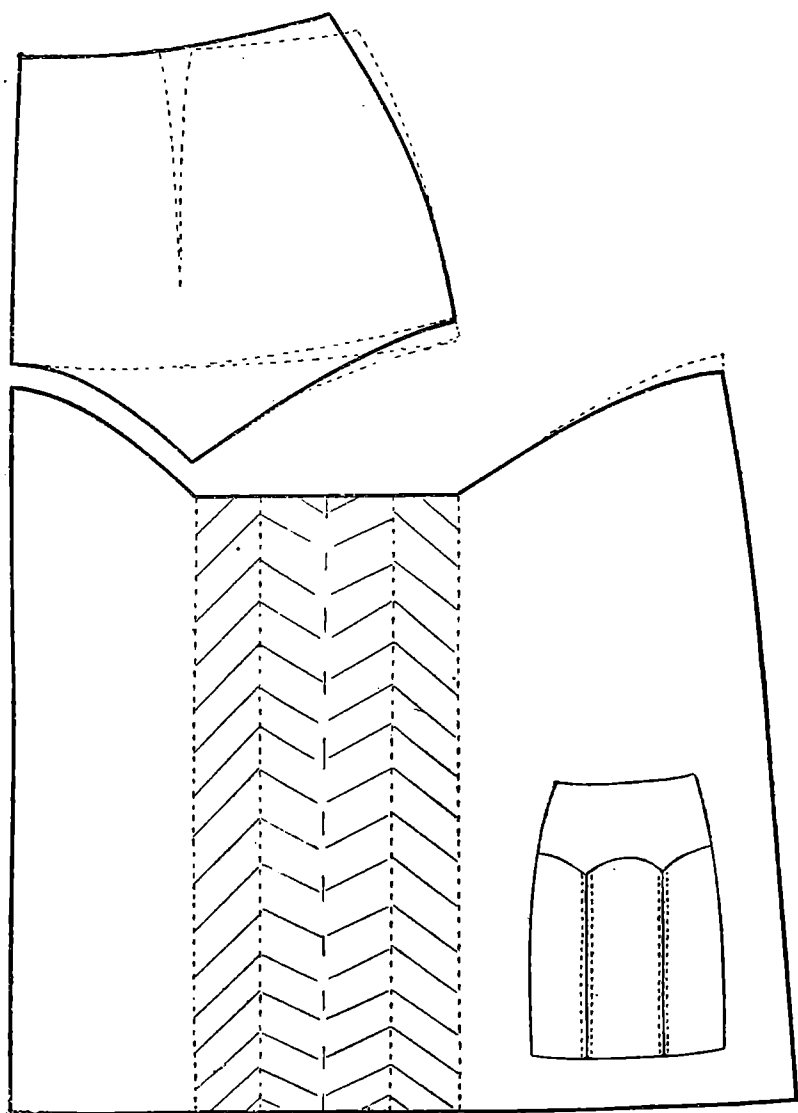


FIG. 15.

light pleatings, by occasional contact with those firms who specialise in their production.

These applications of the principles governing the use of the seam and its equivalents are necessarily restricted by the size and scope of this work. They are here treated in isolation because many of them have to be embodied in the systematic garment-drawings in later chapters; and it is important that they

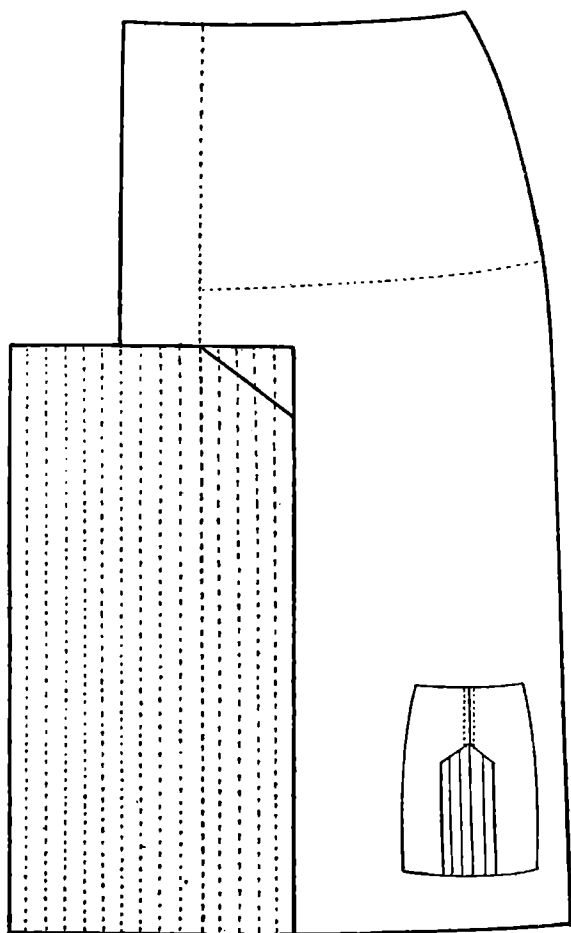


FIG. 16.

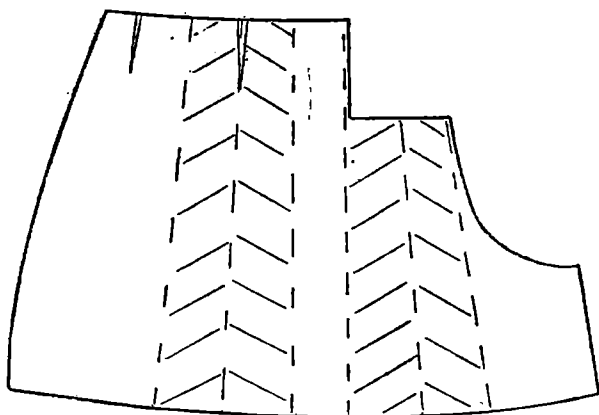


FIG. 17.

should be understood apart from their use in any particular garment. This is said here because the ground covered in this chapter has a subsidiary place in pattern systems: style effects, involving the use of seams for fashion purposes, lie outside the basic pattern. It is therefore of greater importance that they should be regarded as belonging to that aspect of pattern designing which concerns itself with decorative features for reasons of changing fashion. One point, however, should be clearly made where convention requires that, for fitting purposes, a seam shall be in a given place—it should be exploited if practicable for style purposes; and, inversely, where a seam is placed primarily for fashion purposes, it should also be used for fitting, if it is at all suitably placed.

It will be seen, then, that the application of these principles extends far beyond the few examples dealt with: indeed, their application, singly and in combination, is limited only by the designer's imagination and skill. The whole range of caped styles is an illustration in point: every caped garment is based on the principle of extension of hem, with or without the seam, and the section of this volume dealing with the cape should be regarded as the extended application of a principle of drapery to a base pattern. In the whole range of clothing technology no more promising field for experiment can be found than this linking of art to design by the use of features based on simple

principles. The scope of their application is infinite, given the designer with principles soundly based and imagination developed by observation and training.

This may best be stimulated by a study of historic costume. Good design is the utilisation of all known dress features, of all times, and of all countries: dress is ageless and knows no nationality. The pleat and the seam are almost as old as the art of weaving: yet they are still capable of variation and adaptation in modern design. No radical change has taken place in costume for many centuries: dress knows progressive variation, but no revolution. The silhouette changes from season to season, but not violently. The keynote is the orderly development of simple forms to complex variations; but the pleat, the seam, and the flare are the chief means by which change works out, and not only in garments for the more decorative sex, who appear to have nearly appropriated the term "dress design" to their own use, but in men's clothes, too, we see the more conservative working out of the same basic factors. These essential features, then, should be understood, so that their possibilities may be exploited to the utmost.

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CHAPTER III

THE BASE PATTERN

The points of difference between a base pattern and a garment design have been emphasised. The correct procedure in producing any pattern containing added style features or unusual variations from the normal is to work from the known to the desired, from the simple to the complex, from the plain base pattern to the elaborate design.

In this chapter we shall approach the matter by first considering a pattern in its simplest form, first treating the torso in its fitting points; then the front and the collar: afterwards the sleeve will be considered in relation to the base pattern for the trunk. Every point will be justified by explanation, and thus it is hoped to build up a reasoned method of procedure. If a sound basis can thus be built up, the designer will be able to account for every step he takes: he will also know what effects follow from any variation he may make from the normal.

First: in comparable garments for men and women the same problems arise: both physical structures are similar in their main fitting features. Both have lengths and girths; and these are applied to the pattern in precisely the same way. The law of girth tolerances applies equally, too. The same rules locate the scye, in its position and in its size; and any slight disparity between the male and female form is arranged by a correspondingly slight variation in the way the rule is applied; not in the rule itself. In both male and female the waist girth is normally less than the breast or bust girths and the hip girth will be as large or larger: thus the same principles of decrease, or suppression, in the waist, and increase, or increment at the hip, are applied. The sleeve again fulfils the same function in garments for man and woman: both must be related to the arm and to the scye; the same basic rules must, therefore, be observed. In each case, too, the collar bears the same relationship to the shoulder and the neck column, thus demanding the application of common principles.

Those simple style features which are common to both groups, *e.g.*, varieties of front, lapel, seam placement, are arranged in precisely the same way.

There is, therefore, an essential unity in this matter of form fitting: the same laws of fitting and draping must be observed, with only such variations as can be justified by the slight differences in shape and balance which may be observed between the forms of man and woman. This unity goes deeper than is at first recognised, going down to a fundamental harmony in basic physical proportion. The psychological differences between the male and female in their dress perception and valuation are very real, but they lie outside the province of this work, and in no way can they modify the point here made.

Lectures given before trade technical societies are symptomatic of confused thinking on this major point. In one course a demonstration of women's garment designing by using only direct measures; followed up by the cutting of bodycoats by a shoulder-scale system, concluded with a discourse on designing for the men's wholesale trade, by breast-scale methods. It is apparent that all these different approaches to an assessment of the human torso were partial and incomplete: *only by combining the truth underlying each into a working synthesis can certainty and simplicity be reached.*

To reduce the matter to its simplest form, a female trunk of average size and normal form has been chosen for the development of the process of construction.

The only safe rules in the use of measurements are:—

(a) *a direct measurement should be used whenever it can be taken accurately and applied safely ;*

(b) *a derived measurement may be used when a direct measure cannot be safely used. This will normally be a fraction of a scale which has been taken from a representative dimension (chest or shoulder for trunk garment: seat girth for leg garment). A scale is necessary only when accurate direct measures cannot be taken and applied ; it presupposes that all parts constructed by the scale will be proportionate to the main dimension on which the scale was based. For example, if no direct measures are taken of the size and position of the scye, fractions of a breast or shoulder-scale are used ; thus a scye, proportionate in size and location to the breast or shoulder, has been obtained.*

The drafting of a garment pattern consists in the correct

application of the measurements taken from the body, transferred to the pattern in the exact places, and on the vertical and lateral lines on which they were measured on the figure itself.

Order of Procedure.

The length and girth measures should be dealt with first: the derived data and scale quantities only after the direct measurements have been placed. This order should be carefully observed, because it brings the drafting process to its simplest terms and keeps two different types of data separate and distinct. Confusion of thought occurs when two different sets of measurements are alternated in their application: simplicity and clearness in drawing make for accuracy and speed, and should be cultivated.

In measurement, the lengths come first; and where possible, should be placed first on the draft. The requirements are:—

- (a) lengths applied net;
- (b) girths applied plus tolerances;
- (c) scye located and fixed as to size by scale;
- (d) neck girths and shape fixed by scale;
- (e) waist reduced by direct measurement;
- (f) hip increased by direct measurement.

(Fig. 18.)

Size of figure: S.W.: breast 34 ins., bust 35 ins. Drafted net, without allowance for seams. Scale $\frac{1}{2}$ breast = 17 ins.

Applying the length measurements:

Square lines from *O*.

A = $\frac{1}{2}$ in. from *O*. This nape point is the starting point.

AC = waist length.

CD is the computed distance from the waist (the smallest girth) to the hips (the largest girth). This has been fixed by long usage at 7 ins., and in the proportionate figure of normal development may safely be used. It should, however, be regarded more properly as a fraction of the total height of the figure, and, therefore, varying with the height; a little greater in the very tall woman, a little less in one shorter than average. The measurement should be taken on the largest pelvic girth, and that quantity plus tolerance should be put into the garment.

AB = the distance from the nape to a lateral line on the body close under the armpits. This dimension is quite obviously a quantity of the total height, and should be fixed as such. This line is placed with reference to both the height and girth of the figure, both factors making their individual demands. Two scales, one based on height and another derived from girth, will therefore operate, and the reasons for their use have been set out in "Theory of Garment-Pattern Making", Chap. VIII. All that need be stated here is that no scale based *solely* on girth may be used, without revision, to locate height factors.

The accepted principle is that a standard scye depth should be fixed, which will give a satisfactory result for a figure of a known average height and girth. Assume that a woman of 5 ft. 5 ins. height and 36 ins. breast girth will need a scye depth of $8\frac{1}{2}$ ins. To this standard should be added $\frac{1}{8}$ in. for every inch of height over 5 ft. 5 ins., and $\frac{1}{16}$ in. for every inch of breast girth over 36 ins. Deductions from the standard will be made for heights below 5 ft. 5 ins. and breast girths below 36 ins. The breast measurement, not the bust girth, should form the basis of this calculation. The amount by which the bust exceeds the breast merely represents the purely local development of the mammary glands and will vary considerably between women of the same basic skeleton size, and indeed between various stages of development of the same woman. For example, the bone structure of the body may remain constant in size over a number of years, but the amount by which the girth over the bust exceeds the breast measurement taken closely under the arms will vary by from 1 in. in maidenhood to 5 ins. or more in later life.

The following examples will illustrate the working of the two scales:—

(a) Height 5 ft. 7 ins., breast girth 38 ins. = $8\frac{1}{2}$ ins. standard, plus $\frac{2}{8}$ in. for greater height, plus $\frac{2}{16}$ in. for greater girth, = $8\frac{7}{8}$ ins. scye depth.

(b) Height 5 ft. 2 ins., breast girth 34 ins. = $8\frac{1}{2}$ ins. standard, minus $\frac{3}{8}$ in. for less height, minus $\frac{2}{16}$ in. for less girth, = 8 ins. scye depth.

(c) Height 5 ft. 8 ins., breast girth 33 ins. = $8\frac{1}{2}$ ins. standard, plus $\frac{3}{8}$ in. for greater height, minus $\frac{3}{16}$ in. for less girth = $8\frac{11}{16}$ ins. scye depth.

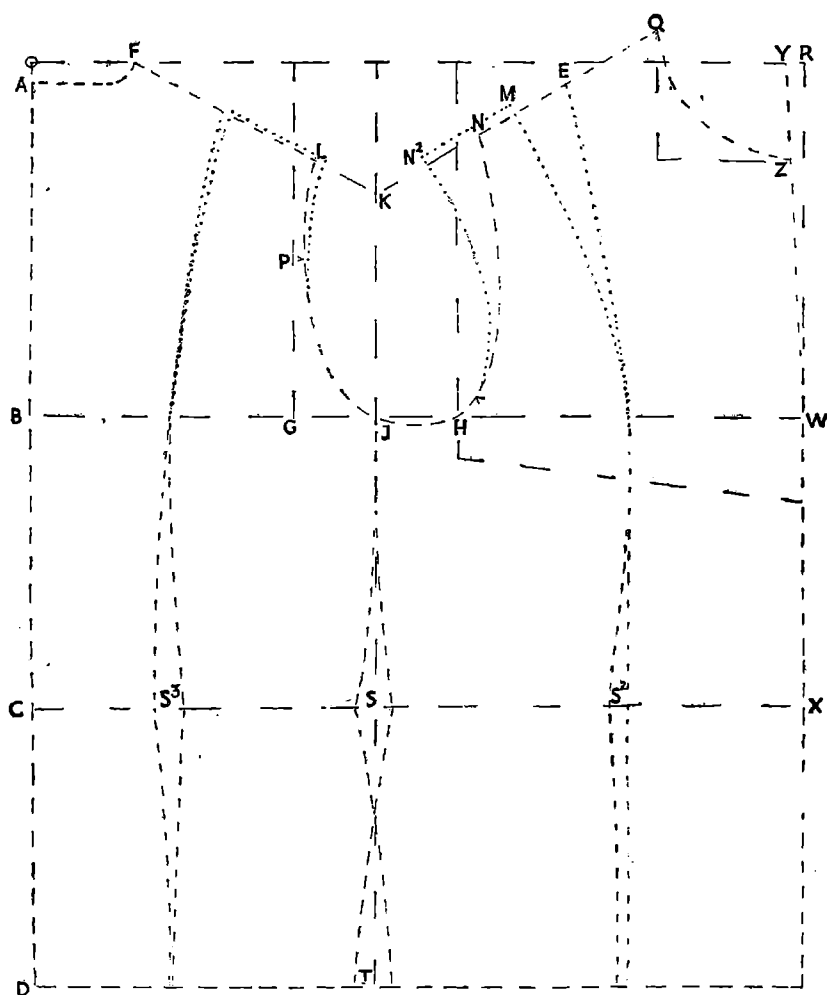


FIG. 18.

The standard scye depth of $8\frac{1}{2}$ ins. will be found correct for the formal type of tailored coat or jacket; and for all figures where the arm-socket is neither abnormally high nor low. Where the shoulders are very square, denoting arms placed high in the trunk; or very sloping, indicating that the arms are placed lower than normal in the body, a direct measure should be taken. In the case of overgarments requiring a normal scye depth this method is recommended. The overgarment will be sized-up over the dimensions of a jacket, and the increase in the girth dimensions would automatically give the necessary greater depth of scye.

This method of placing the scye-depth construction line has been extensively tested over a wide variety of garments for all figures from Maids to the larger Outsizes and has been found to give accurate results.

The lengths have now been applied to the pattern, and the scye-depth fixed by a scale quantity with regard to the height and girth of the figure.

Applying the Girth Measurements.

BW and CX = half bust girth plus 1 in. tolerance. The pattern will be half the bust girth plus the required tolerance. The theory of a garment tolerance has been explained in "Theory", Chaps. IV and VII, and its relation to increase in size demonstrated. The point to grasp when actually drawing the pattern is that every pattern system makes provision for a tolerance in its own way. It may not explain just how much over the net girths is being put into the garment nor say why the amount is necessary; but to produce a wearable garment it must be present. The amount of 2 ins. over the bust girth has become the trade convention, and this means adding 1 in. to the width of the pattern.

A word of caution may be desirable here. The young and inexperienced pattern-maker may think that to produce an easier-fitting garment for a given girth, he will do so by increasing the 1 in. tolerance to, say, 2 ins. This would merely deposit the extra material on the centre front of the garment, without increasing any other girth dimension in the garment. *The only way to produce an easier-fitting garment is to increase the breast and bust girths by the required amount, and to then derive the scale from the increased girth of breast.* Only in this way can the amount be properly distributed over all those garment parts

fixed by a girth scale. The back will be a little wider, the scye slightly larger, and the front more easy-fitting.

The centre front line, drawn through *WX*, has now been correctly placed, and it coincides, on the pattern, with a line drawn down the exact centre front of the body. *This gives a rectangle within which the pattern may be drawn.* The position of the arm-hole is related to the centre front and centre back and can now be placed.

The Position and Size of the Scye.

The fixing of the base of the scye relative to the nape has been dealt with in (a).

The three remaining dimensions are:—

- (i) front of scye;
- (ii) back of scye;
- (iii) height of shoulder above scye base.

When these have been located there will result a scye girth dimension.

(i) The front of scye is an important anatomical point: at this part the garment must fit; there must be neither too much nor too little in the garment. The normal movement of the arm is forward, so that every time the arm reaches out it comes into contact with the garment at this point. The garment should therefore fit without constriction, otherwise the movement of the arm is impeded. Every designer knows that one of the most exasperating defects in fit is tightness at this point: he also is aware that no excess of material may be permitted without spoiling the appearance of the garment. A quarter of an inch may be enough to separate these two extremes: care, then, is demanded in fixing our point.

In the proportionate figure of normal stance the girth of the trunk on the breast line may be divided into three approximately equal parts; the spine to front of arm-socket, and across breast between the two arm-sockets. The point then is located at two-thirds of scale from the centre-back construction line. This gives the vertical line *H*. The scye front is drawn through this point, and is shaped to conform to the width of the shoulder at *N*,

(ii) The back of the scye involves a different set of factors: the chief of them being that no definite anatomical point is concerned. The back joins the sleeve by a seam, and the position of this seam is arbitrary. True, the width of the shoulder does come into the matter, but style dictates even that dimension. In the end, therefore, fashion decides where this seam shall be: it occurs nearer the spine or nearer the elbow, according to current style. *The dominant dimension is from spine to elbow: this is fixed, and the back width and sleeve length share this measurement in what proportion the designer decides.* If the back is narrower, then the sleeve must be longer at the top of the hind-arm seam to compensate: should the back be cut wider, then the amount is removed from the sleeve. If this is fully grasped, a further point will be plain: namely, that a system for sleeve construction must begin by assuming that the sleeve and back are so closely related, that any sleeve system must take for granted a certain width of back. The two parts are so much part of one dimension that any widening or narrowing of the back demands corresponding compensation on the upper sleeve.

There is this further consideration: the back may be widened for style purposes, to suggest a wide shoulder, up to any reasonable amount, say $\frac{3}{4}$ in. to 1 in. This part of the garment is on a plane that may be extended without impeding movement or causing discomfort in wear. In this respect it is just the reverse of the front of scye.

The width of back construction line, vertical from G , is therefore fixed as an arbitrary quantity, $BG = \frac{1}{3} \text{ sc.} + 1 \text{ in.}$

(iii) The height of shoulder above scye base may be taken with callipers as a direct measure, and in the proportionate form of normal structure it will be found to be a little over two-thirds of the nape to scye-base measurement. This inferred measurement, therefore, is adopted and used.

The vertical line from J is midway GH ; JK will therefore be two-thirds of $AB + \frac{1}{4} \text{ in.}$ The front shoulder-line is drawn QK , and the back shoulder FK . (If it is desired, for purposes of style, to slightly alter the direction of this seam, it can be done by connecting the back shoulder to a point, say, $\frac{1}{2}$ in. above K , and the front shoulder to a point the same distance below K .)

This gives a shoulder level which takes no account of lifting or padding for fashion purposes. The sleeve system given later assumes this natural basic shoulder.

The scye has now been fixed in position and in size. No direct measurement has been used because of their difficulty and unreliability in this section. Scale quantities only have been used: thus the scye is, in size, proportionate to the breast girth, from which the scale was derived, and, in position, is correct for the normal figure.

THE SHOULDER DART

The fitting of the bust, in all sizes, must be effected by a dart above, below, or behind. The normal method is the shoulder dart, and this position so often coincides with the panel arrangement of seams. The amount to be removed *may* be fixed as an arbitrary amount decided as the result of experience. It is plain, however, that the only reason for using the dart is to create shape over the bust, and that the size of the dart will be decided solely by the amount of shape to be obtained: less in an undeveloped figure, more in a form with excessive bust development. In "Theory", Chap. IX, a method was explained by which the shoulder dart could be decided automatically when drafting. Briefly the formula is:—

(a) Fix the front neck point in the position decided after consideration of the figure (see Figs. 18, 23, 24).

(b) Fix the shoulder end by measuring forward from *P* $\frac{1}{8}$ sc. + 1 in. (in all sizes) on to line *QK*: this will locate point *N*². From *Q* measure backwards $\frac{1}{2}$ shoulder width, giving points *E* and *M*. The dotted line (Fig. 18) demonstrates the method.

(c) It will be observed that the amount of the dart increases with the size of the figure: this is, of course, the chief justification of the method.

(d) The neck girth is a dimension for which no direct measurement can be taken satisfactorily or applied without possibility of error. The line on the body with which we are concerned is the base of the neck; the girth from the nape to the fonticulus, on a line where the neck column emerges from the upper thorax.

The location of this line can be demonstrated in the base patterns better than in a garment having a lapel or revers, because the neck line of the garment follows the anatomical line of the body $AFQZ$. A = the nape, F and Q the side neck (which system makers call the neck-point), Z = the fonticulus. The centre-front line ZW follows the breast bone.

The line AF follows the flattened shape of the nape to side neck. The line QZ completes the circuit, and this may be compared with the quadrant of the circle: indeed, the geometry of the circle, while not being *exactly* applicable, will help in understanding why Q and Z are fixed in their positions. The radius of the circle is approximately one-sixth of its circumference. Q and Z are placed at about one-sixth of scale from point Y deemed to be the centre of the front half of the neck column. This assumes that the scale will be equal to the girth of the root of the neck $AFQZ$, and this assumption is so nearly correct that it may be relied on to give a neck-line, suitable in size and position for all female forms. Point Y is one twenty-fourth of *half-breast* from R . (Note: this may be more than one twenty-fourth of *scale*.) The line WZ therefore reflects the shape of the thorax from breast to throat. It therefore follows that the amount WYR is the quantity normally removed as gorge dart, to shape the garment to the form of the body, breast to neck. This will apply, of course, to men's *and* women's garments.

In the subsequent section dealing with the provision of shape in the upper thorax, and showing when and why the neck point may be moved from the position laid down here, the effects of moving the neck point in any direction will be demonstrated. The first and chief point to grasp is that wherever Q is placed, whether forward or backward, it must, when the garment is put together, be joined to F , *which is a fixed point*. Any movement of Q , therefore, can have effects only in the front of the garment, and not on line AF on the back.

(e) The *reduction of waist* should be made with three factors in mind:—

- (i) The garment as a whole is drafted in a rectangle

of the width of half the bust girth plus tolerance. The waist girth will be less than this amount, and a comparison of the two dimensions will indicate the total amount by which the waist is less than the bust. Say bust is 35 ins. and waist is 26 ins.: the tolerance may be ignored here because it must be the same in both dimensions. The difference is 9 ins. on the whole garment, or $4\frac{1}{2}$ ins. on the half garment. This is the *total amount* by which waist is less than bust, and thus has to be modified before it can be used on the pattern.

(ii) In logical extension of (i) this quantity of $4\frac{1}{2}$ ins. assumes a degree of fitting coinciding with the size and shape of the body itself. But there are degrees of fitting, and this is acknowledged in the terms "close" fitting, "semi" fitting, "easy" fitting, which are time-honoured forms of our trade expression. The matter is reasoned in "Theory", Chap. IX, and this should be consulted. The base, then, is not a "fitting" garment in the same sense as in the bodice, and some material should be left in the garment over and above the minimum requirements. What this amount will be must depend on the general style-effect desired, but a little more than half the total amount, say $2\frac{1}{4}$ ins., will give an agreeable contour.

One further consideration in the case of the base is that there is only one long seam at which this quantity may be removed. The total amount of $2\frac{1}{4}$ ins. may, therefore, be reduced at the side-seams; or, alternatively, 1 in. may be removed there, and a dart of $\frac{3}{4}$ in. arranged under the blade and another of $\frac{1}{2}$ in. under the bust. The latter would give the better result, applying as it does the principle of spreading the amount to be reduced over a greater number of figure points and so securing the greatest shape effect.

(iii) The correct localisation of suppressions or reductions to secure a desired shape has always been a design problem. A method of sectional measurement of girths has been demonstrated ("Theory", Chap. IX) by which correct results can be obtained in any type of female or male figure. When drafting his pattern,

the designer has in mind the size and shape of the figure for which he is designing. It may be a typical figure employed by the firm, or it is, perhaps, a Stockmann dummy figure: in either case this method may be used, as it applies to both living and lay figures.

1 in. may, therefore, be removed at S , $\frac{1}{2}$ in. at S^2 , and $\frac{3}{4}$ in. at S^3 .

(f) It remains to apply the last measurement to the body of the garment, and to provide for hip increment. Here we reason inversely from (e) waist reduction, for this is an increase; but the same reasoning applies. The amount by which half the hip girth exceeds half the bust girth must be put into the pattern at T , the sidehip. Bust = 35 ins., hip = 37 ins., difference 2 ins. Half of this difference must be made at T . This will give a "close" hip, a feature desired by the designer. If, however, easiness of fit is demanded, as it will be in certain types of provincial out-sizes, then it may be included at point T .

The amount to be removed at the waist, and the quantity to be added at the hip, having been arranged, the sideseam can be completed down to the hem, having regard to (a) the good shape and direction of this important seam, and (b) the amount by which the hem shall exceed the hip girth. This last quantity is drapery, pure and simple, and will be decided by the sense of style and line-value.

NECK POINT AND DISPROPORTION

There remains Point Q , which, in a base pattern for this size and posture, is placed $\frac{3}{4}$ in. above line OR . This point is merely a halting-place on the front balance line, nape to the centre-front bust, and marks correctly the front balance of this normal figure. Its position depends, therefore, on the type of figure being dealt with. It is fixed to give a front length proportionate to the breast girth. In certain types of the outsize figure, however, the very great increase of bust and breast girth will be out of size-harmony with the shoulder development, and this balance length will be disproportionate to all the other measurements. It is simply local disproportion which must be provided for outside of a

proportionate scale: and the type of form in which it is most obvious is the middle-income woman whose figure has been well kept and properly corseted, whose back is straight, carriage erect, say 41 ins. breast girth, 46 ins. bust. Here is obvious local disproportion, which must be provided for outside the working of a proportionate scale.

The formula for fixing Point *Q*, then, will be:

(a) Up to 36 ins. bust girth, three-quarters above line *OR* will give a proportionate front balance length:

(b) Add to the constant, $\frac{3}{4}$ in., $\frac{1}{8}$ in. for every inch of bust girth in excess of 36 ins.

The method has been applied in Figs. 23 and 24, which should be referred to on this point.

Success in applying this method depends on careful discrimination between differing figures of large bust girth. It is essentially a provision for shape, and the only figure type to which it should be applied is the one described above. In that form-type the balance lengths are clearly out of phase, the front having lengthened by excessive development of the mammary glands. To clarify still further, take a figure of similar bust girth, 46 ins., whose breast girth is 44 ins., back rounded, head very forward, trunk thick and lacking the shape of the first type, whose corsetry and posture have been neglected. This form type is found by tens of thousands in every industrial district where life is harder, amenities few, and care of the figure has to be subordinated to harder manual toil. Obviously the shape is different and the scale will be derived differently; there will not be the disparity between the back and front balance lengths: they will be more nearly approximate.

In such a case point *Q* would quite properly stand $\frac{3}{4}$ in. above line *OR*, and no addition would be made.

Analysis and Summary.

At this point we may profitably pause to correlate what has been done.

Every point and part in the base pattern for a trunk garment has been placed appropriately to the form selected; every part of the pattern has been related to its counterpart on the body.

For purposes of explanation, a normal female figure was

chosen: the same procedure may, however, be applied to a trunk garment for any form type, male or female, adult or juvenile. This general statement will, of course, be subject to this modification: size will vary, and shape, caused by posture, age, partial development, etc., will differ as between figures and sizes; but the general configuration is constant throughout the human race. There are differences of shape and size; and no other factors enter into the drawing of the base pattern: size is provided by carefully applying to the pattern the accurate measures of the body; shape is given by the proper distribution of size throughout the pattern.

Up to this point, then, no attempt at design, as such, has been made: size and shape only have been considered. When these two foundation elements have been properly embodied, garment design may begin: fashion silhouette may be arranged by a careful placing of seams; current variations of collar, lapel, sleeve, pocket, and the rest, may be made. The imagination of the designer may find full scope—but only on the sure foundation of a sound base pattern.

Only the simplest elements of design are considered later in this work, and then only in respect of those garments that permit of easy departure from basic construction, *e.g.* the skirt and cape groups. The aim throughout is to lay the foundation on which design may build.

Length and Girth.

It will have been noted that practically every garment for the trunk of the body is constructed within a rectangle formed by the two chief dimensions: the length, and the girth; the former applied net, the latter plus a tolerance. Now this rectangular outline applies to trunk garments for men and women, boys and girls: it is the basic common factor of garments. Direct measurement only has given us this general framework within which the garment is drawn: no scale quantity enters into the matter up to this point.

Within this rectangular girder-work other dimensions are applied. The waist will normally be less than the breast or bust, so suppression is made within the rectangle. The hip or seat girth will usually be greater than the breast or bust; therefore an addition is made by overlaying parts within the rectangle. These suppressions and increments are determined by direct measures.

The number of seams in the base pattern may be more or less than shown in Fig. 18, but whatever their number, the shape of the trunk of the garment is determined by direct measurement.

Application of Scale Quantities.

It was next seen that the scye of the garment was fixed vertically by applying a derived measure based on height and girth, both of which factors clearly affect this point. Laterally, with reference to centre-front and centre-back, it was placed by applying fractions of a scale based on both the size and shape of the figure.

In Fig. 18 the size chosen was 34 ins. breast girth, and 35 ins. bust; and the rectangle was made the width of half bust plus 1 in. tolerance. The scale was fixed at half breast-girth, seeing that the figure had practically no bust development. This scale gives to back and front a width appropriate to the needs of the figure. Consider now another figure, one still measuring 35 ins. bust girth, but only $32\frac{1}{2}$ ins. breast—a not uncommon form-type in the Maids' sizes. The scale in this case could not have been the same as in the previous garment: it would have had to be smaller; to recognise that with the smaller breast-girth there would be a shoulder smaller in all respects. The back would need to be slightly narrower and the front breast a little wider to fit the bust, which is $2\frac{1}{2}$ ins. more than breast. To get these effects, a scale less than 17 would have been required. The fixing of such a scale cannot become an arbitrary matter involving guess-work; so a constant is used to modify the scale.

Where the torso has no appreciable bust development, it differs little from the shape of the male youth; and a scale of half breast girth would be used to make the pattern. In both the male and female trunk the breast-girth dimension will represent the basic bone structure of the rib-cage.

But where bust development is appreciable (say 2 ins. and more, over breast-girth) then this should be regarded as a local addition on the front of the trunk for which a local provision must be made on the front of the garment. The bone structure of the shoulder has, in this instance, not kept pace with the bust development, nor even with the breast; for some little of the bust growth is certainly reflected in the breast. A less scale than half breast is therefore demanded, both by the size of the shoulder

and arm, and by the shape of the trunk, which now requires a wider front and a narrower back.

The constant which is used to give this reduced scale will be the breast girth of an adult female in which bust development has hardly begun; say 32 ins. The mean of the constant and the actual breast-girth will give a mean breast-girth to which the shoulder will be proportionate: the shoulder being the chief part of the garment constructed by scale quantities.

In terms of scale, the two figures contrasted above will work out as follows:—

(a) Breast-girth 34 ins., bust 35 ins. =

$$\frac{\text{Breast-girth}}{2} = 17 \text{ scale.}$$

(b) Breast-girth $32\frac{1}{2}$ ins., bust 35 ins. =

$$\frac{\text{Breast-girth} + \text{constant}}{2} = \text{mean breast-girth:}$$

$$\text{half of which is taken as scale} = \frac{32\frac{1}{2} + 32}{2} = \frac{64\frac{1}{2}}{2} =$$

$$\frac{32\frac{1}{4}}{2} = 16\frac{1}{8} \text{ scale.}$$

Both constructional rectangles would be of the same dimensions; the scales, however, would vary. (a) would measure up in girth exactly as (b), but would have slightly less front width and a little greater back stretch. Put into a sentence: overall size is the same in both cases; the variation of scale alters the amounts allocated to back and front widths, thus bringing the garment into harmony with the figure.

Bust development in the female form demands a variation of plain basic scale, which should, to be of scientific and practical value, arithmetically represent physical growth and development. A garment scale, of any kind, and however derived, is an attempt to make arithmetic march with physical development without breaking step. A constant is needed to restrain and modify a scale whenever development artificially produces lack of harmony between bust and shoulder. In the male form, the use of a constant in scale-finding is needed when corpulency causes breast (from which the scale is derived) and shoulder (which is constructed by the scale) to break step in development.

It is thus seen that, so long as growth proceeds along the lines of proportionate development in adult male and female forms, a scale of half breast will properly reflect that figure on the pattern. But, when size increases disproportionately the lack of harmony between shoulder and bust (in women) or shoulder and waist (in men) a constant is needed to derive a correct scale. Whenever variation for abnormal development is demanded, it should affect only the scale itself, and not the fractions of the scale allotted to the various parts of the shoulder and neck. To vary scale quantities from garment to garment would reduce pattern making to chaos: these should be maintained from size to size and garment to garment; any variation must be a variation of the scale itself and not of its parts.

Because of the paramount importance of this principle, it is desirable for the student to experiment in applying scale variations. It may well take the form of selecting three figures each having the same bust girth, but a different breast-girth; thus demanding a slightly different scale. The rectangular outline would be the same in each case, but the application of three different scales would produce three different scye positions: and it would be found that each of them secured the shape and size of the figure for which the scale was derived.

Front Design.

Here we leave the making of the base pattern to add the front of the garment, and thus cross the line that separates construction from design. By dealing with front design at this point, sequence is maintained and order observed: it follows what would be the next step in the actual making of the pattern.

The great majority of garments fasten at the front, in the places most convenient for the hands to manipulate the fastenings. There are many types, from the zipp, with its ungracious efficiency, to the hole-and-button, which, despite hoary antiquity, can still be decorative; the principles involved in their construction are found in "Theory", Chap. V, and are here applied to three of the more normal types of front found in women's coats. In these cases, seam allowances are not made: where, however, a pattern is being drafted with seams included, front-edge seam allowances should be made.

By **BUTTONSTAND** is meant the distance from the centre of the button to the edge of the garment. **BUTTONHOLE STAND** conveys the distance from the eye of the hole to the garment edge. **FRONT WRAP** is the amount by which the fronts overlay in wear.

In D.B. garments there will be two vertical lines of buttons, and the distance these lines are apart will depend on the type of garment.

In a woman's jacket the eye of the buttonhole will be about 1 in. from the finished edge; in an overgarment, any suitable quantity over 1 in. The deciding factor is the size of button used on a particular garment.

The basis of all front construction is the centre-front line on the pattern, which must be placed with reference to the anatomical centre-front of the body.

(i) *S.B. Front.*

Formula:
$$\frac{\text{Button stand} + \text{Buttonhole Stand}}{2} = \text{amount allowed beyond centre line.}$$

Example (Fig. 19): B.S. $2\frac{1}{2}$ ins. + B.H.S. 1 in. = $\frac{3\frac{1}{2} \text{ ins.}}{2} = 1\frac{3}{4}$ ins.
= amount allowed beyond centre line.

(ii) *D.B. Front.*

Formula: $\frac{1}{2}$ buttons apart + B.H.S. = amount allowed beyond centre line.

Example (Fig. 20): $\frac{1}{2}$ buttons apart, $2\frac{3}{4}$ ins. + B.H.S. 1 in. = $3\frac{3}{4}$ ins.
= amount allowed beyond centre line.

(iii) *Linked Front.*

There is a buttonhole in each front, and the fastening is effected by two buttons linked together by a "neck" whose length will be twice the amount of the buttonhole stand (Fig. 21).

In women's coats of the wrap-over type, where the fronts overlay but there are no fastenings, the same formulae may be used.

Where patterns are drafted with seams included, then appropriate amounts should be included in these formulae to cover all seam requirements.

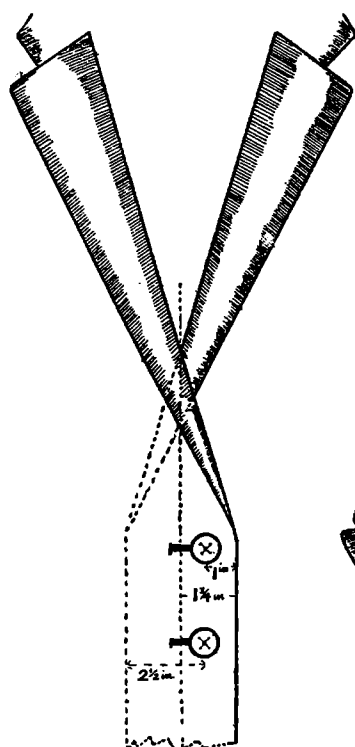


FIG. 19.

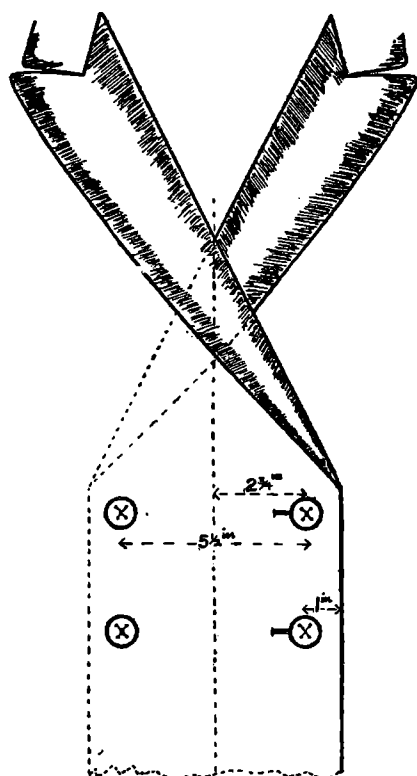


FIG. 20.

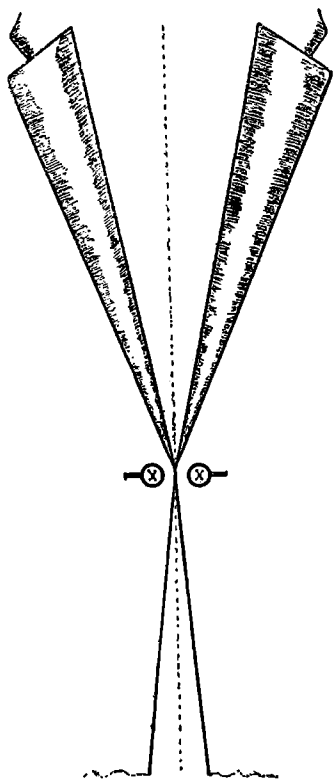


FIG. 21.

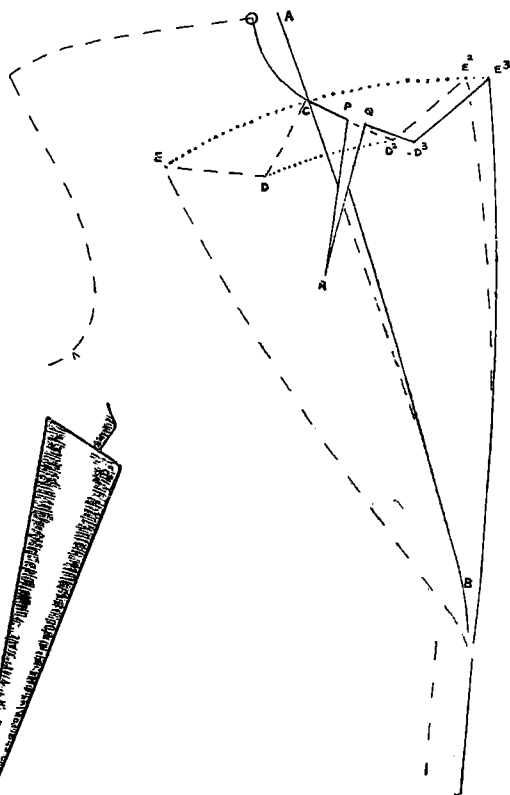


FIG. 22.

Lapel Construction (Fig. 22).

The lapel, too, is part of the purely artistic side of pattern drawing: it is in no sense related to the anatomical basis of design, and thus may be considered without reference to any factor but style.

After the centre-front line has been fixed and the front edge decided:

- (a) Draw the crease row AB .
- (b) Sketch the lapel desired $CDEB$ in its actual position on the front.
- (c) Transfer this over the crease row to CD^3E^2B . (Use compasses, pivoting on B .)
- (d) Provide gorge suppression PQR .
- (e) Compensate the lapel for the amount removed by drawing the edge through QD^3E^3B .

By following this procedure the designer makes certain that his pattern reproduces accurately the lapel he desires. The method holds good for any type of garment front.

CHAPTER IV

VARIATIONS FROM THE NORMAL BASE

A Method of Providing Bust Shape by Shoulder Dart.

(Outsize figure.)

(Fig. 23.)

$$H^2P = \frac{1}{8} \text{ sc.} + \frac{1}{2} \text{ in.}$$

$$YP^1 = \frac{1}{8} \text{ sc.} + \frac{1}{2} \text{ in.}$$

E midway PP^1 .

PQ^1 = usual $\frac{3}{4}$ in. for normal figure + $\frac{1}{8}$ in. for every 1 in. of increase of bust above 36 in.

LL^1 = half the amount raised for increase of bust at PQ^1 .

Pivoting at *Z* and sweep curve $Q^1E^1Q^2$.

E^1Q^1 = half shoulder width.

Q^1N^2 = amount *PE* taken out in the dart.

NN^2 = half-shoulder width.

By this method:

(a) The front balance length is maintained.

(b) The neck point has been tentatively fixed relative to centre-front, as for frock, and to scye, as for lapel garment. The actual pattern neck point is a half-way compromise, and the amount of the compromise is the amount removed in the dart.

(c) The amount will automatically vary with the size of garment: more in the larger sizes, less in the smaller sizes; which would appear to meet the requirements of the whole range of sizes.

An Alternative Method of Arranging Bust Shape by Hidden Shoulder Dart.

(Outsize figure.)

(Fig. 24.)

The same general procedure as in Fig. 23, but the position of the dart is moved forward and is obscured under the lapel, by moving *E* one-third of the distance P^1P .

The dart should finish about 1 in. above the bust-line.

It will be noted that this method permits of some latitude in

placing the dart, and advantage should be taken of this, for ultimately its position will be decided by the length and width of the lapel which must obscure it.

Variation of Front Neck Point Position.

Any variation from the normal stance of the body must be accompanied by a corresponding alteration of the balance of the garment. The normal stance for the adult female is neither

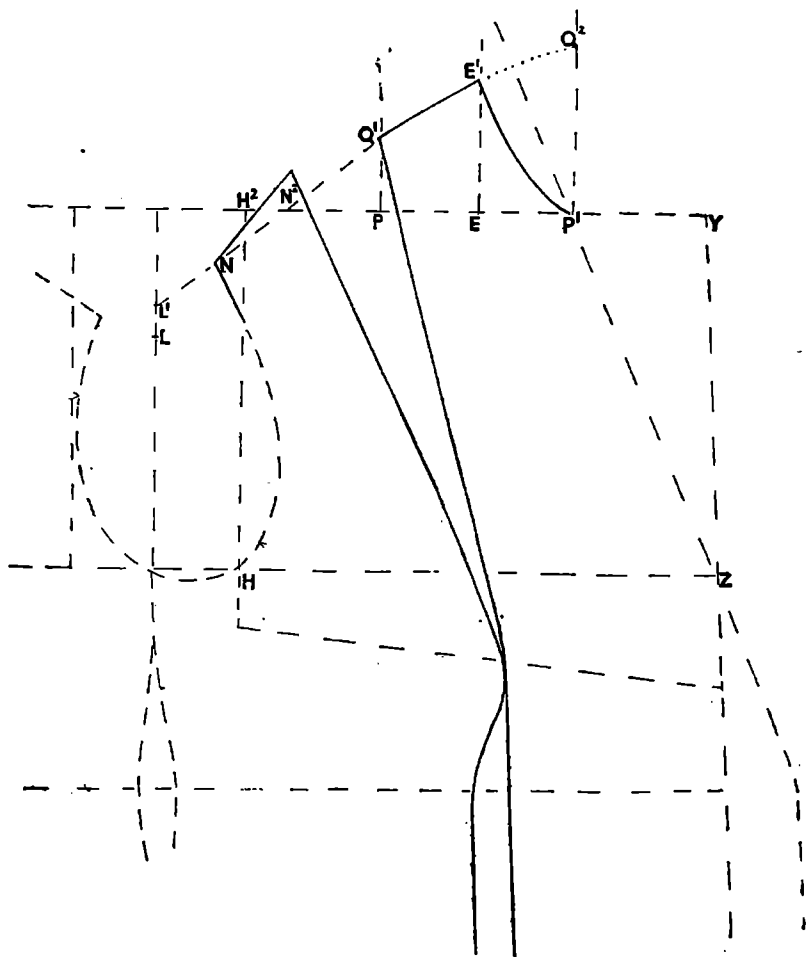


FIG. 23.

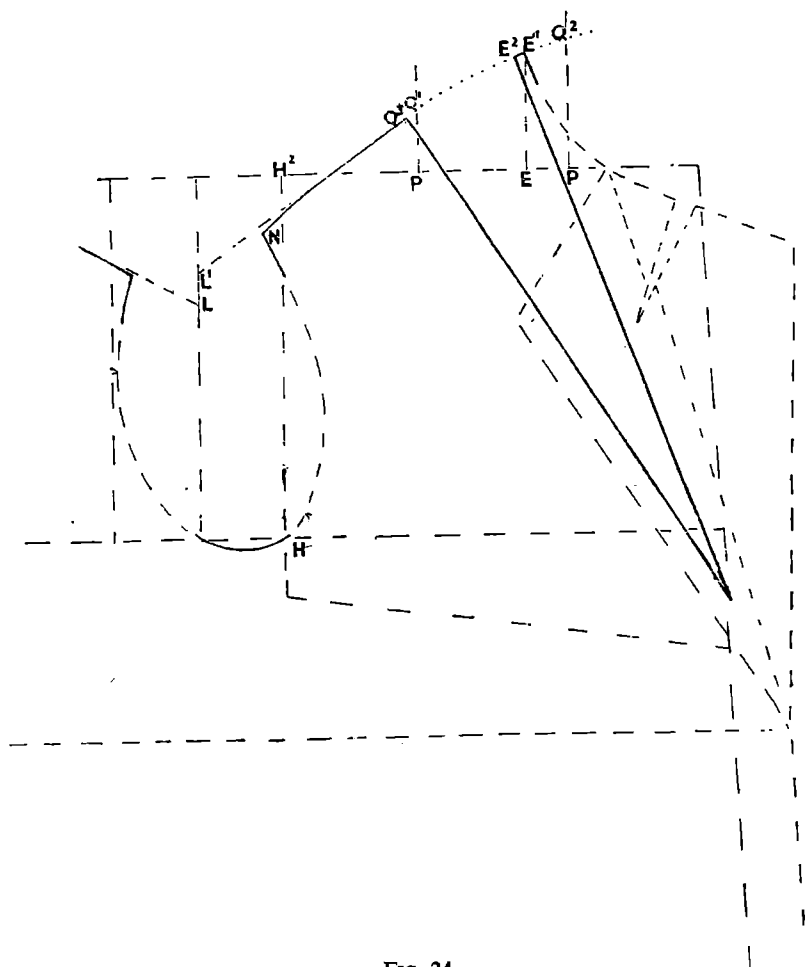


FIG. 24.

stooping nor over-erect, but upright: that of the normal male a slightly forward inclination of the head, of the form type usually known as "student's stoop". The pattern systems take these positions for granted and embody them in all trunk garments. The principles involved are stated in "Theory", Chap. VI: here, however, it is shown what is involved when provision for abnormal erectness or stoop has to be made. The old rule, "where the body departs from the normal, the pattern must follow", is sound.

Take the point at the side neck where the shoulder seam ends: call it the neck point. If the figure stoops forward, little or much, this point on the body moves forward and downward; if the figure is over-erect, the point moves backward and upward. The garment in this part, then, must follow the body in its departure from normal.

Fig. 25*a* gives three common types of body posture, and Fig. 25*b* shows the variations made to the front of the garment in respect of these departures from normal attitude. It will be noted that the compensations at back neck are one half of the amounts by which the front neck is affected. In any variations forward from the normal stance the front will shorten and the back will lengthen. It should not be assumed that what the front thus loses in length, the back gains. Every experiment conducted

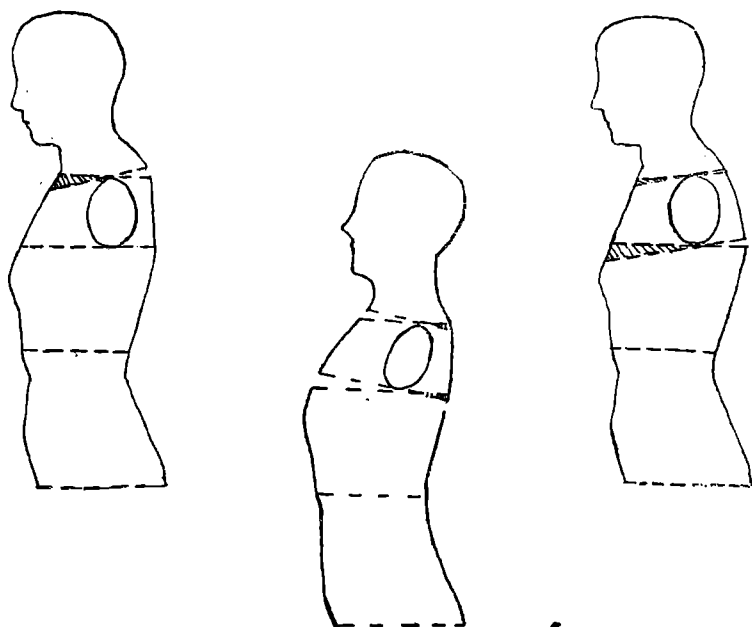
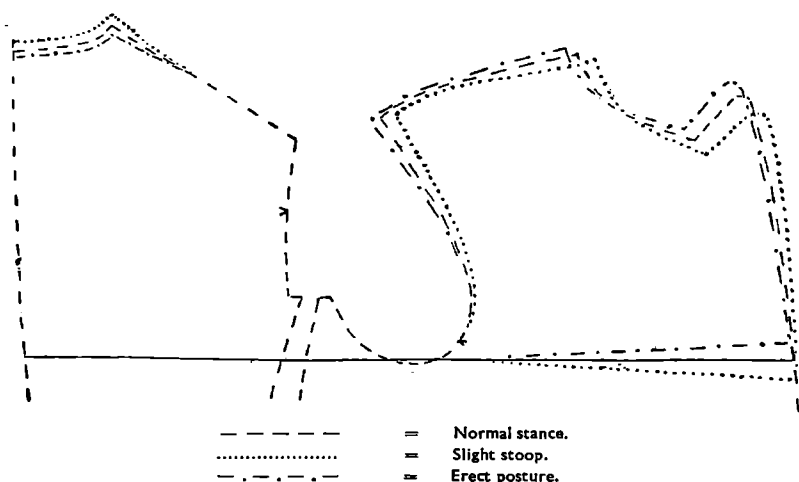


FIG. 25 *a*.

FIG. 25 *b*.

with a view to finding out exact loss and gain has pointed unmistakably to the back being affected by half the amount of the front. The anatomical reasons for this are obvious: the lengthening or shortening of the back contour is limited by the bone and cartilage structure of the spine. The front, however, has no such limitation to lengthening or shortening; it has merely the rib structure, which is no rigid support, and which may easily sink into the soft mass of the abdomen. Occupational causes or unconscious neglect of posture very often result in a greater or less forward "pitch" of the trunk. Less often do we meet a figure more erect than normal.

The changes to the back neck should be noted. The slight lengthening of back contour is provided for in length; and the increased roundness in the blade section is reflected in the garment by easing-on the extra back shoulder seam length to the front shoulder.

In the erect posture the same factors operate, but inversely.

These effects can be produced either by making the appropriate alterations when drafting by a normal system, or by variation from a base pattern for the normal form.

Figs. 25*a* and 25*b* show balance in the male form; but, within narrow limits, the same principles and methods apply to the female figure.

Variation for Length of Neck.

One fairly common form of disproportion is long or short neck; or to use a more exact terminology, sloping or square shoulders. The anatomical cause is greater or less vertical height between the nape and the shoulder level. Fig. 26 shows a normal form with variations in each direction. Fig. 27 gives the method by which these variations are transferred to the pattern. In the back, length or shortness is arranged on a vertical line; in the front, variation is made on a line drawn from the front of scye through the neck point. The movement above or below the front neck point has often been mistaken for "straightening" or "crookening" the shoulder. This latter operation can be done only when the front neck point is varied, while the back neck remains unaltered. It will be seen in Fig. 27 that both are raised or lowered by the same amount, and therefore that no changes other than greater or less length are effected.

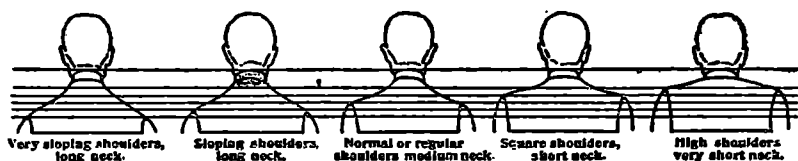


FIG. 26.

Moving the Front Neck Point.

The front neck point exists in its normal position because most trunk garments are designed with a seam running along, or near, the ridge of the shoulder. Assume a garment without a shoulder seam; one, say, arranged with a yoke extending from front breast-line to the blade at the back. What is normally the front neck point disappears, and if referred to at all, is merely a point on a continuous neck line. Its importance to the designer lies in the fact that some rather important things happen when it is moved from its ideal position. Figs. 25*b* and 27 show what happens when the position is altered for change of attitude, or for unusual figures: there are, however, other effects that depend on moving this point laterally.

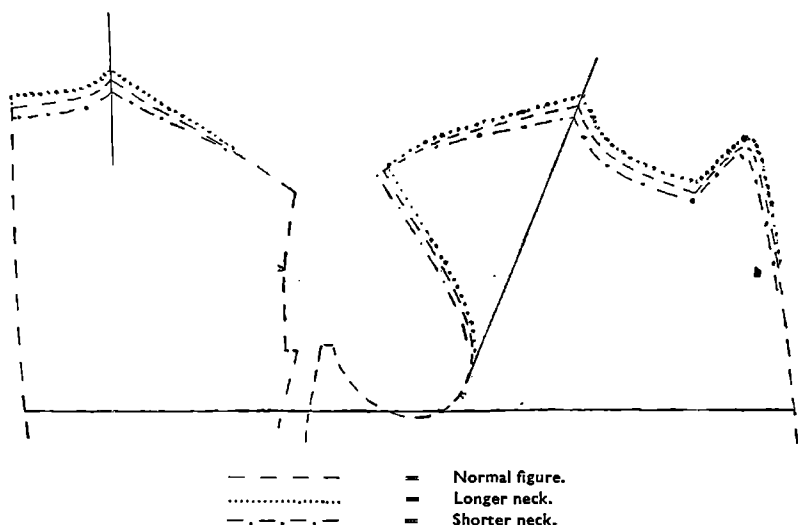


FIG. 27.

Fig. 27b shows a shoulder with the normal neck point marked 3 and placed in its natural position relative to the back of the garment. The first thing to note is that, no matter what takes place in the front shoulder, *the true neck point on the figure is that of the back*, marked 1; because whether the front neck point is located at 3, 4 or 2, that point must come back to the point 1, which is static—indeed, it cannot move. Point 3, then, is movable, but point 1 is static, and it is only because of this that a variety of effects can be got: and these effects affect the front of the garment only.

If the point is drafted to 2 instead of the normal 3, the shoulder is said to be “straightened”: if placed at 4, it has been “crookened”. Now, what happens when either of these changes has been made? Note first that the normal shoulder has certain dimensions: 7, 3, the front-balance length, and 6, 3, the scye-neck length. If the point is advanced to 2, these dimensions are actually and relatively changed; 7, 2 is less, while 6, 2 is greater than before. In manufacture, point 2 is joined to 1, thus slightly bracing up the front of the garment, and slightly easing the shoulder between 6 and 5.

If, however, the point is receded, in the flat pattern, to 4, then an opposite set of effects result. Dimension 7, 4 is lengthened, thus slightly letting down the front, and 6, 4 is shortened, giving a closer, cleaner shoulder between 6 and 5.

These things, then, happen when the point is advanced or receded. Why does the designer want these effects? What advantages does he gain over the normal shoulder? The answer is largely concerned with methods of manufacture; but the point should also be made that men and women are concerned that the

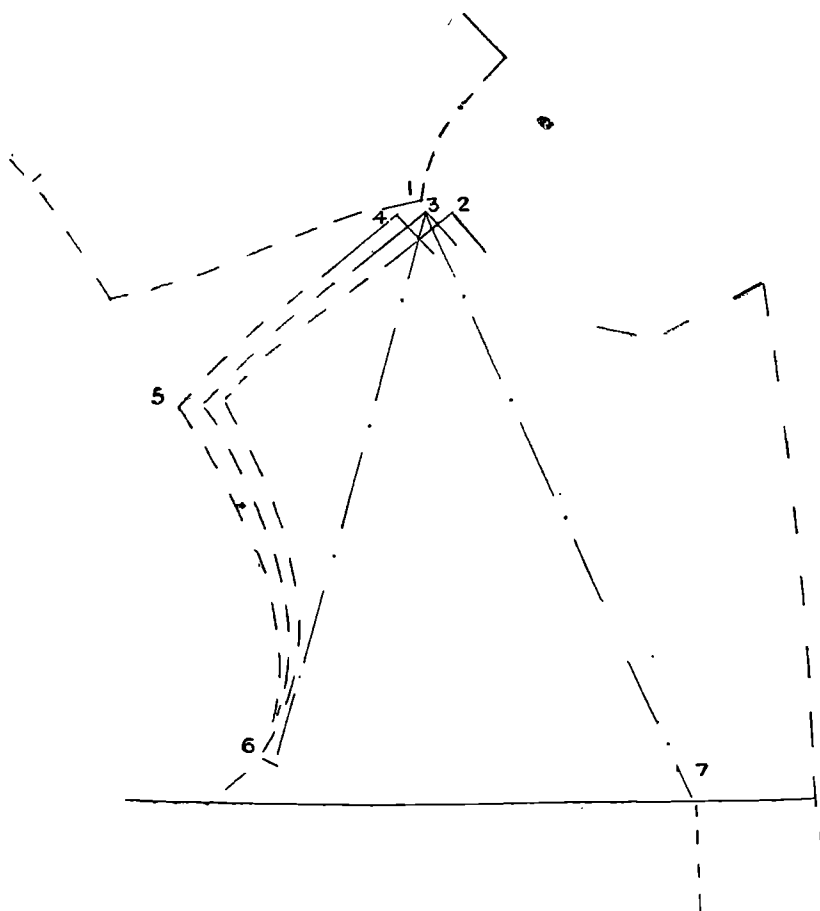


FIG. 27 b.

collar should fit closely to the side neck: changes in men's neck-wear have demanded a snug collar; and women have no neck-wear to prevent even the most closely-cut collar fitting perfectly. In the author's lifetime these changes have synchronised with the adoption of a straighter shoulder.

Methods of manufacture do, of course, make certain demands within the pattern itself. The board-make of the retail bespoke tailor would demand a more crooked shoulder, with its opportunities for giving shape to the garment by "bridling" on line 7, 4, and slightly straining out between 6 and 5. The machine-make of the wholesale manufacturer, on the other hand, requires a straighter shoulder, with its easier fit in wear and lighter demands on craftsmanship in the factory.

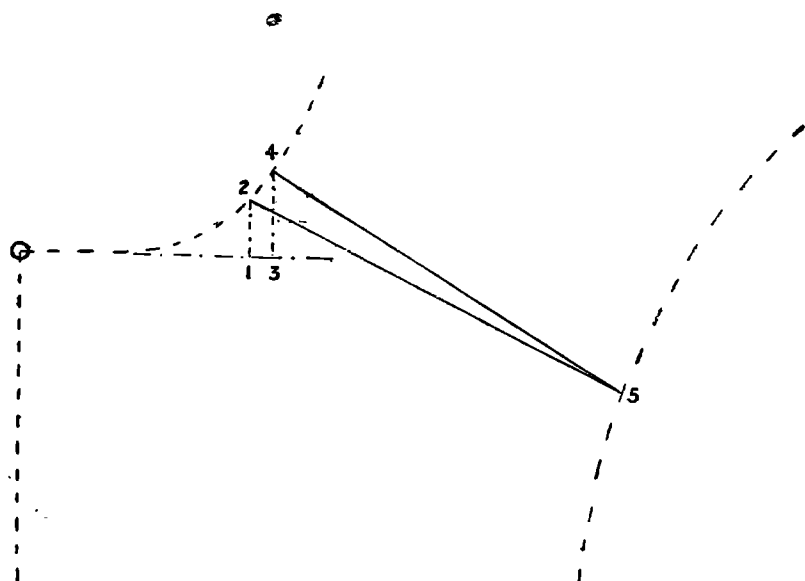


FIG. 27 c.

Moving the Back Neck Point.

Fig. 27c shows the back neck section. The normal position of the neck point is shown at 2, an amount usually $\frac{3}{4}$ in. above point 1. It is a fairly common but wrong practice to widen the back at the neck without raising point 2.

The matter should be regarded simply as the forward movement of the shoulder seam, with *the amount taken from the front added to the back*. The back and front should be viewed as one part of the garment, divided, for purposes of fitting, into two parts by the shoulder seam. Loss in one of the parts, front or back, implies equal gain in the other part.

If, for any reason, the shoulder seam is moved forward, the back is widened and the front is reduced by the exact amount. The point, normally at 2, *would be raised to 4*, thus maintaining the size and shape of the neck.

CHAPTER V

THE SLEEVE

THE first sleeve was a continuation of the garment to cover the arm. It exists in its primitive form to-day in many sub-tropical countries: made of thin fabric and of ample dimensions, it serves its purpose admirably. In colder climates, heavier material and closer fit would be desirable and the obvious disadvantage of a sleeve cut at a right angle to the trunk had to be overcome: the sleeve had to be arranged nearly parallel to the long axis of the trunk. The natural method was followed, and the sleeve became a separate part of the garment more nearly following, in shape and size, the arm it had to cover.

Fig. 28 illustrates the stages of the long process. The loose garment would be cut on line 2, 3 (*A*). A half-way point is reached in (*B*). (*C*) shows the evolution almost complete. From this point, small but continuous changes in seam placement, all designed to improve fit and originate fashion, have brought the sleeve to its modern forms. Compare the sleeve in a jacket with the shirt sleeve underneath; and this with a lady's kimono sleeve, of the type found in a dressing-gown, and make a mental contrast. They are widely separated relations on the family tree of the sleeves, products of different periods and countries, yet they have been modernised and are found in every wardrobe.

The Two-Piece Sleeve.

The sleeve will be constructed with reference to:

- (a) *The arm.*
- (b) *The scye.*

(a) The arm is not straight: the upper and lower arms are not in linear continuity. The sleeve is usually a draped part of the garment, *i.e.* it contains material in excess of the actual dimensions of the arm. The amount of this excess will be determined by the style of sleeve.

The sleeve, therefore, is constructed on the assumption that the arm is slightly curved.

The length of the sleeve and the width of cuff are found by direct measures.

The normal movement of the arm is forward, and excess material has to be allowed to permit of this movement.

The shape and size of the deltoid muscles demand that the sleeve shall be large enough at that part. This will result in an excess of sleeve over scye requirements: this excess will be distributed in the scye at the top crown, and the industry recognises it as "the fullness in the sleeve-head".

(b) The part of the sleeve to fit the scye is called the "crown".

The "outer-sleeve" covers the outer part of the arm, and the "under-sleeve" covers the under part of the arm. These two parts are joined at the hind-arm, and forearm seams. The only justification for the existence of these two seams is that they enable the general shape of the arm to be put into the sleeve. A plain cylindrical one-piece sleeve would cover the arm, but would not reproduce its shape.

These seams are placed to definite points in the scye, known as the "front-pitch" and the "back-pitch". The sleeve is constructed on the assumption that the front and back seams are joined to the front- and back-pitch marks. Thus is the "balance", or correct hang, of the sleeve in the garment maintained.

The crown of the sleeve is constructed from data taken from the scye.

The One-Piece Sleeve.

The construction of this type of sleeve is similar to that of the two-piece: the same data are used and the same principles are involved. There is, however, this important difference, that

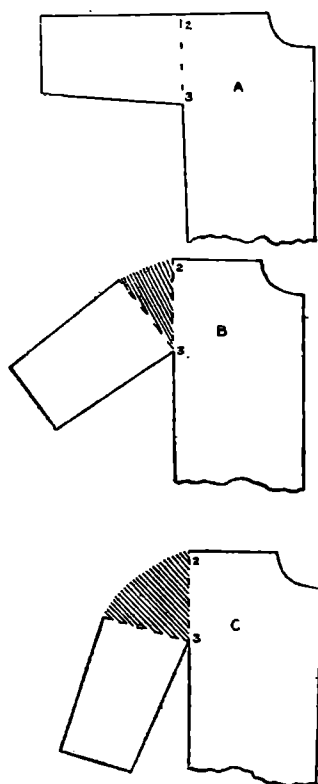


FIG. 28.

where the two-piece is able, by means of two seams, to conform to the general shape of the arm, the one-piece is constructed, below the scye base, as a cylinder, tapering if need be, but without curves. Thus, the absence of seams gives a minimum of shape value to this part of the garment.

Sleeve Measurement.

The measurements taken for the sleeve are very few indeed. The difficulty of direct measurement is, perhaps, more obvious here than in any other part of the garment. Even the lengths present difficulty. Three length dimensions only are possible:

- (a) The forearm, from front pitch to cuff.
- (b) The hind-arm, spine—elbow—cuff.
- (c) From the side neck, along the ridge of the shoulder, continued to cuff.

(a) is a difficult measure to take on the figure, and should not be attempted by the inexperienced. The industry has, however, embodied the forearm measure in its size card, and these charted lengths may be relied on as being proportionate to all other dimensions of a given size. For example, a regular man's form of 68 ins. height and 38 ins. breast girth will have a forearm sleeve length of 18 ins. This length is accepted as a little more than a quarter of the total height: it will, therefore, be affected by height variation. Every inch above or below the 68 ins. standard will reflect in the forearm measurement by $\frac{1}{4}$ in. above or below the standard 18 ins.

It should be pointed out, however, that this reasoned formula relates only to the proportionate form of normal growth. Where corpulency has caused a deposit of fatty tissue under the arm, the scye-base will, of course, be lower; and while the spine—elbow—cuff length may remain static, the forearm measure will be shorter because a greater proportion of the overall length of the sleeve is taken up by the crown, leaving less for the pendant part below the scye-base. (A similar disparity, between side- and leg-length, occurs in the construction of corpulent trousers: the deposit of tissue lowers the fork, thus shortening the leg and increasing the body-rise by a similar amount.) If, however, the scye-base is fixed, as directed, by reference to height and girth,

then sleeve construction may proceed quite normally by the system laid down.

(b) The spine—elbow—cuff length may be taken accurately; with the spine as a definite starting point and the wrist bone as the unmistakable terminus, no difficulty need be anticipated.

True, this dimension is divided between the width of the back and the length of the back sleeve, and a seam occurs at the junction of these two parts. It should, then, be recognised that back-width and sleeve-length divide this dimension between them *in agreed ratio*. The point to grasp is that every normal sleeve system assumes a certain width of back. This must be so, since the back width is largely decided by the fashion requirements of any given season. It will be noted that there is a *change of plane* where the sleeve leaves the back, and a *change of direction*, too, since the normal posture of the arm is downwards from the scye. The difficulty arises mainly because there is here no fixed anatomical point at which the back ends and the arm begins, so the uniting seam may be placed on any chosen line within a latitude of, say, $\frac{3}{4}$ in. This freedom in fixing the seam is to be welcomed since it provides limits within which style design may operate. In the method given (Figs. 28a and b), a proportionate width of back is, therefore, assumed.

It should be stressed, however, that when, for any reason dictated by changing fashion or involved design, compensation has to be made in the sleeve for any change in the back width, this compensation should be made at the exact part affected.

(c) The measurement from the neck point, along the shoulder ridge and down the centre of the outer sleeve to the cuff, may be very useful in certain garment types, *e.g.* all kinds of one-piece Raglan sleeves and those of the Magyar wrap group. In these garments the sleeve is actually an extension of the shoulder, and is continued on the same plane; which decides the value of this measurement in these groups of garments.

The *width measurements* fall under two heads: those below the scye base, and those above.

The cuff width is affected by the size of the wearer, the type of garment, and current fashion; and, as none of these is absolute or stable, they must all be considered before this width is determined.

The elbow width is never measured, yet it is always adequate: shape, rather than size, is the aim at this part. What is desired

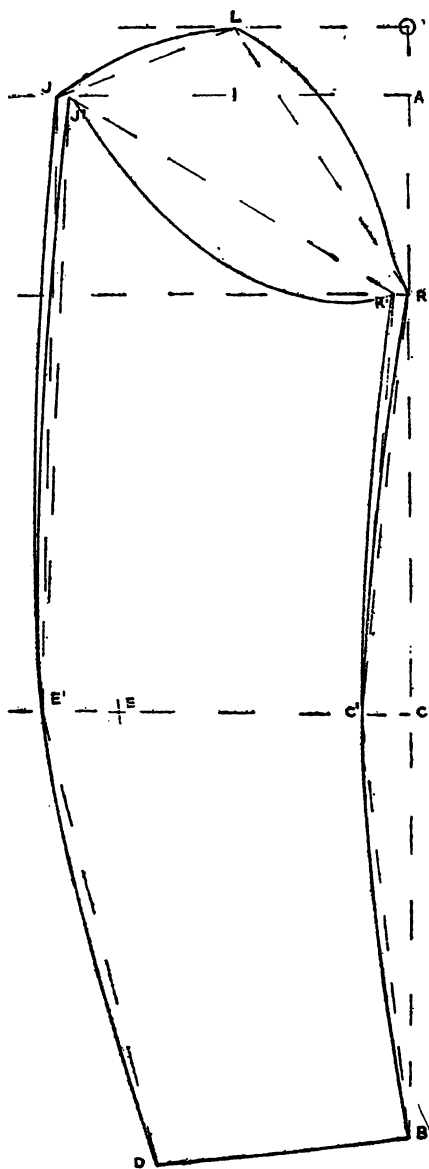


FIG. 28 b.

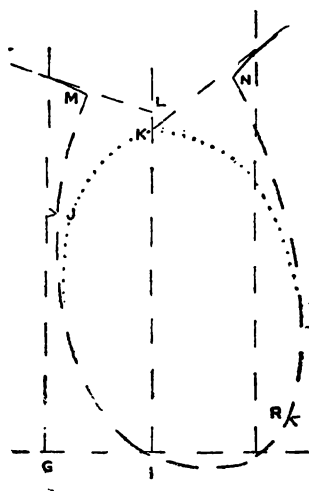


FIG. 28 a.

is that the front and back sleeve seams shall have the curve value desirable in the particular garment type. These curves should always be drawn with reference to a chord, a straight line drawn between the curve endings, as *RB* and *JED* (Fig. 28*b*), giving curve values of *CC*¹ and *EE*¹ respectively.

Thus far simple direct measurements have served. The crown of the sleeve, however, does not admit of such simple treatment. A study of the most-used sleeve systems of the last century reveals a bewildering variety of methods; few of them, however, related to the self-evident facts. The width and height of the sleeve crown have been decided by a proportion of a breast- or shoulder-scale, or by an empirical measurement that could not be related to any part of the body or the garment.

What exactly is required? It would appear that if the following needs are met, the matter has been simplified:

(*a*) There must be just enough vertical height above base-of-scye to fit smoothly when the arm is at rest. This quantity is *IK* (Fig. 28*a*).

(*b*) There must be sufficient lateral width, *RJ* (Figs. 28*a* and *b*), to ensure that the sleeve shall drape easily over the convex deltoid muscles, and that there is a little additional width so that the arm may be moved with comfort and without strain on the back sleeve seam.

Both these requirements are intelligently met by measuring the armhole from the back pitch over the shoulder to the front pitch; and by applying this quantity diagonally *RJ*. The width of the sleeve crown has thus been fixed by applying the nearest direct measure that could be taken; and this width will be found adequate to all requirements. If both sleeve and scye are measured and compared, it will be found that about 1½ ins. of sleeve-head fullness, constant in all sizes, has been provided. This amount will be adequate for normal manufacture.

It may not be inappropriate to state here that the thin roll of cotton wadding which is sewn loosely into the sleeve head during manufacture, is used solely to "bolster" this fullness, which is necessary to drape the deltoids. This is said in view of the still widely-held idea that both fullness and bolstering are essentially style features, having no basis in the requirements of the figure.

The Under Sleeve.

Just as the length and shape of the line *RLJ* follow the over shoulder line of the garment, so the part of the sleeve which follows the under arm line must follow the shape of the garment. If the scye is measured on the curved line *JIR* (Fig. 28*a*) and this measure applied on the straight construction line *R¹J¹* (Fig. 28*b*), about $\frac{3}{4}$ in. surplus length is provided. This is about the minimum quantity required: amounts over 1 in. being usual, especially in women's garments.

The fixing of the constructional points in the plain, basic sleeve has followed the sound principle of using direct measurements when they can be obtained accurately; and proportionate scale quantities when direct data are not available. The point should be made here that, seeing that the scye is placed and sized by scale quantities, it appears reasonable that the sleeve, which fits the scye, should also be constructed by scale, in default of accurate direct measures.

Pitching the Sleeve.

The natural position of the arm, when at rest, relative to the trunk, is not perpendicular from the arm socket, but inclined forward at the wrist. This forward hang of the sleeve is provided for by constructing the sleeve from scye data as to size and shape, and then lifting the forearm seam $\frac{3}{4}$ in. to the front pitch. This reproduces in the garment the natural attitude of the arms.

The Basic Two-Piece Sleeve.

Figs. 28*a* and 28*b*, drawn net, without seam allowances.

Top sleeve.

OA = $\frac{1}{2}$ sc.

AR = *JG* = height of back pitch above scye base.

RB = length of forearm.

C = midway *RB* = elbow line.

Measure scye *J-M-N-R* (Fig. 28*a*) and apply to sleeve *RJ*.

L midway *AJ*.

CC¹ = 1 in.

BD = cuff width.

E is on line JD .

$EE^1 = 1\frac{1}{4}$ in.

Under sleeve.

$RR^1 = \frac{3}{8}$ in.

Measure scye JIR (Fig. 28a) and apply to sleeve R^1J^1 .

Complete the pattern by using this girderwork as a basis for good drawing. A system can only give the fitting points: the lines of the pattern are the final test of the designer's artistry and skill.

(*Note.* The curve of the undersleeve R^1J^1 is to be varied as requirements demand. Increase the curve value to give a cleaner fit under the arm when the arm is at rest. There will, however, be little "lift" reserve, and when the arm is raised the whole garment may be lifted. If the curve value is decreased, the opposite effects result. The curve in the diagram is a sound working compromise between two extremes.)

The width of the undersleeve may be increased and the added amount eased into the scye. There can be no doubt that an ample undersleeve hangs better: this is seen especially in women's garments. The student should experiment in this, and similar directions, and carefully note the results obtained. Different fabrics will yield different effects, and style will influence results.

The Basic One-Piece Sleeve.

Figs. 29a and 29b, drawn net, without seam allowances.

$OA = \frac{1}{8}$ sc.

$AR = JG$ = height of back pitch above scye base.

Measure scye $JMNR$ (Fig. 29a) and apply to sleeve RJ .

L midway AJ .

JI on sleeve = JI on scye + $\frac{1}{4}$ in.

RI on sleeve = RI on scye + $\frac{1}{4}$ in.

XZ = length of sleeve.

WY = width of cuff, equal on each side Z .

(*Note.* In all one-piece sleeves point R should be taken as in the diagram: the line should not be taken to the angle of the construction lines. To do so would spoil the curve.)

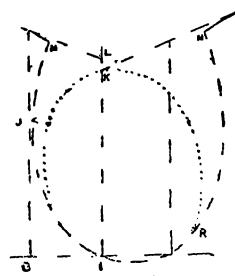


FIG. 29 a.

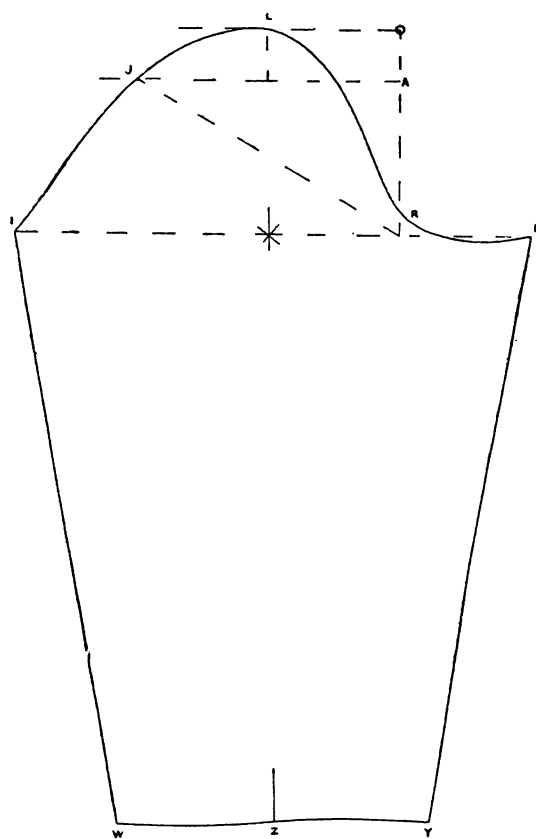


FIG. 29 b.

THE SLEEVE

Variations of Sleeve Seam-placement.

The Split Top Sleeve.

(Fig. 30.)

The effect desired is continuity of seam line from the side neck, across the shoulder, down the top sleeve to the centre cuff: the line must be graceful and correctly placed. The first part of the seam must run along the ridge of the shoulder; and this is arranged from a normal draft by adding to the back an amount, say $\frac{3}{4}$ in. or a little more if necessary, and taking that quantity from the front. *E* is raised to *F*. *J* moved to *H*.

The top sleeve is split at *KL*, *AK* on the sleeve being *BF* on the back, plus $\frac{1}{4}$ in. *CL* on the sleeve is *DH* on the forepart, plus 1 in. These plus quantities provide the fullness necessary for fitting and making up.

The seam should be placed centrally in the top sleeve at elbow and cuff.

The shape effect obtained by removing material at *KL* may be

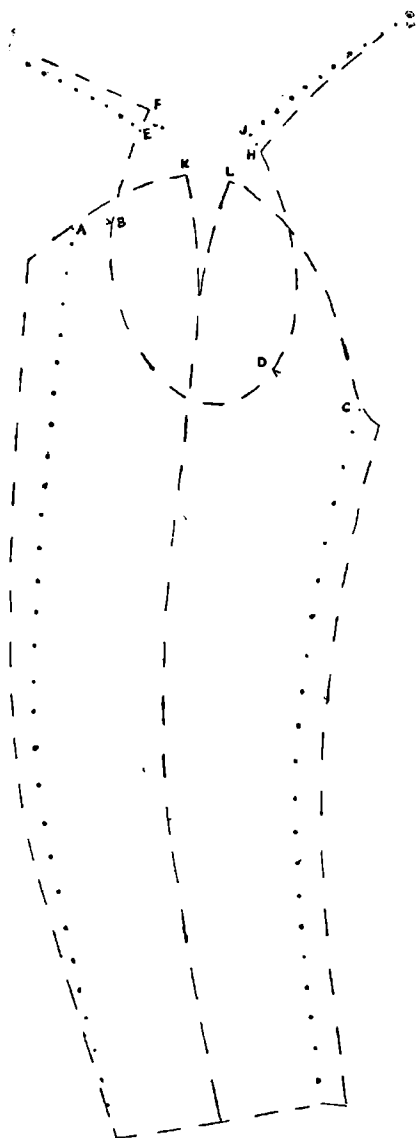


FIG. 30.

varied for style effect: the fabric, too, may demand individual treatment. The distinguishing mark of this seam placement is continuity of graceful line from neck to cuff, and the shoulder end is the critical point to be fixed.

Displacement of Long Seams.

(Fig. 31.)

The only reason for moving these seams is to render them invisible during normal wear of the garment. The forearm seam may be moved by $\frac{3}{4}$ in. to 1 in. The seams should be notched at *CDEF*. In making, *CE*, being slightly longer, should be eased on to *DF*, which should be gently strained when the seam is pressed.

The sleeve lining, however, should not have its front seam displaced.

The back seam may be displaced in the upper part; but only in a sleeve with a ventless cuff should displacement be carried through the cuff.

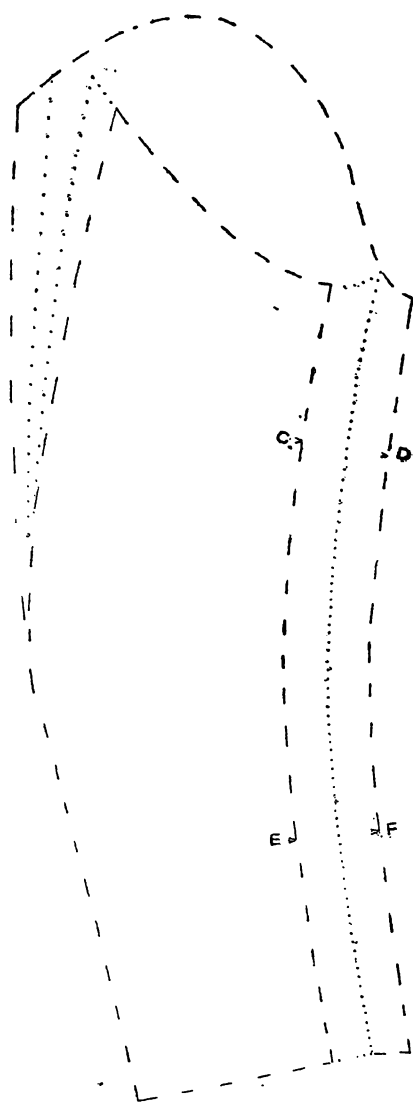


FIG. 31.

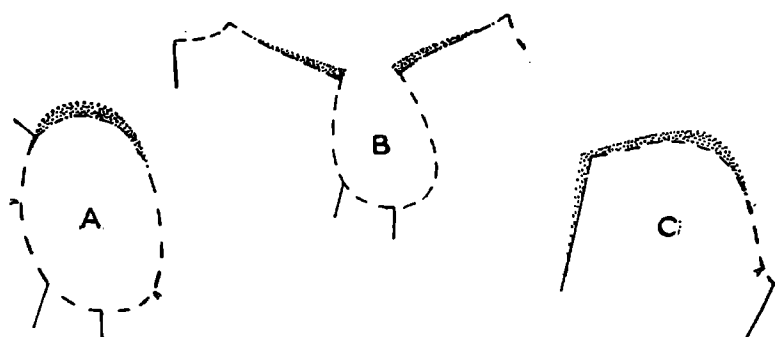


FIG. 32.

Variations Affecting the Sleeve.

Considerations of changing fashion, in silhouette line, or seam placement, may affect the construction of the sleeve. The rule here is that any variation from the base in garment parts adjacent to the sleeve must be reflected in the sleeve itself. Two quite different examples are taken to illustrate this law of compensation.

Shoulders Lifted by Padding.

(Fig. 32.)

The pad is at its greatest thickness at the shoulder-end, where it joins the sleeve and tapers to zero about mid-shoulder (A).

The amount by which the scye girth has been increased should

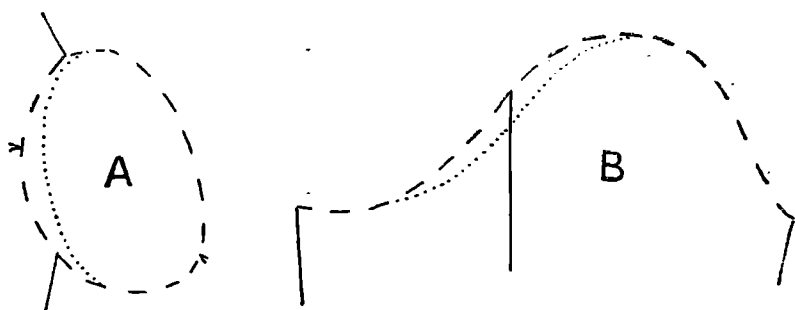


FIG. 33.

be determined first. This can be done by measuring the concave and convex surfaces, and adding the difference of these two measurements to the back and front as shown in *B*.

Next the amount by which the shoulder has been lifted should be added to the height of the sleeve crown (*C*). If it is desired to retain the original amount of sleeve-head fullness, an amount should be added to the width of the top sleeve as in *C*.

Variation of Back Sleeve Seam Position.

(Fig. 33.)

For style purposes the shoulder spread may be made to appear wider by increasing the width of the back to the dotted line *A*.

The basic sleeve and the basic back width are an agreed harmony, and wherever the back seam is placed, the spine to elbow length remains static: any widening of the back, therefore, connotes a reduction in the sleeve, at the adjacent part and by the same amount (*B*). Should the reverse effect be desired, and the back narrowed for style effect, then the sleeve will be increased as compensation.

Sleeve Variation for Outsize Figures.

It will have been observed that, as the proportionate figure of normal dimensions develops into the outsize form, the upper arm increases in girth: tissues being deposited in the triceps, biceps and deltoids. Especially is this the case in the outsize figure common to the industrial districts. This demands a sleeve wide enough at that point to permit of free movement.

Yet it will also have been noted that this increase in arm girth is not accompanied by a scye girth increase to anything near the same degree. Thus a much larger sleeve has to be joined to a scye that is very little more than that of a woman of normal dimensions.

(It will be seen that this uneven growth is reflected in fixing the scye depth line in women's garments; where only $\frac{1}{8}$ in. increase for every extra inch of breast girth is allowed, as against $\frac{1}{2}$ in. in the case of the male, whose scye girth increases proportionally with upper arm girth.)

A dart should, therefore, be allowed in the undersleeve (Fig. 34). The outer sleeve will be drafted as for a normal form. One inch

should be added to the under sleeve width RJ^1 and the dart FG provided. In some firm thin fabrics, fullness or a pleat may be used instead of the cut-and-sewn dart.

The Raglan Sleeve.

The one-piece sleeve is the original form of the Raglan, and it has the top and under sleeves and the shoulder extension cut in one piece, which prevents the getting of those shape effects only given by seams. The type of garment in which this may be used, therefore, is one where protection and easiness of fit are the first requirements. Where, however, any degree of fitting is desired, seams, in their appropriate places, must be used. A number of seam-variations are possible, and during the eighty years in which this garment has been popular a trade convention has grown up, by which certain seam placements are associated with Raglan garments for various occasions of wear. The Raglan shoulder has occasionally been adapted to jackets of various types for women's wear, but only as a style feature: work jackets of the "windjammer" group have adapted it as a purely utilitarian feature. It is in the large groups of overgarments for men's and women's wear that it has met with its widest and most varied design uses.

The Raglan sleeve, in its first and simplest form, consists of the dimensions of the top sleeve, with parts of the back and front shoulder added. Fig. 35 shows how such a sleeve appears "in the flat", and related to the back and front. Instead of one

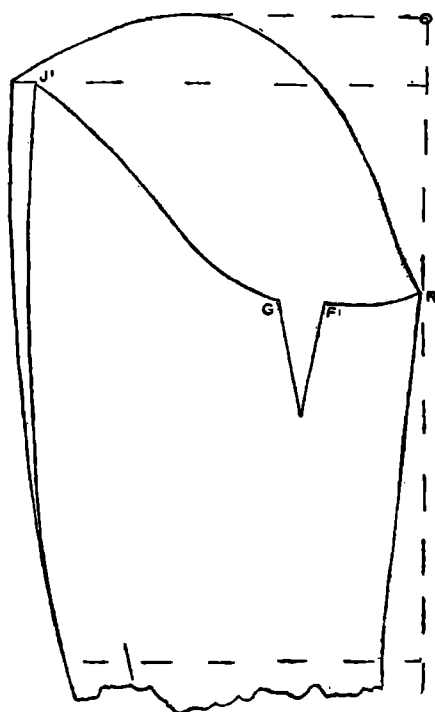


FIG. 34.

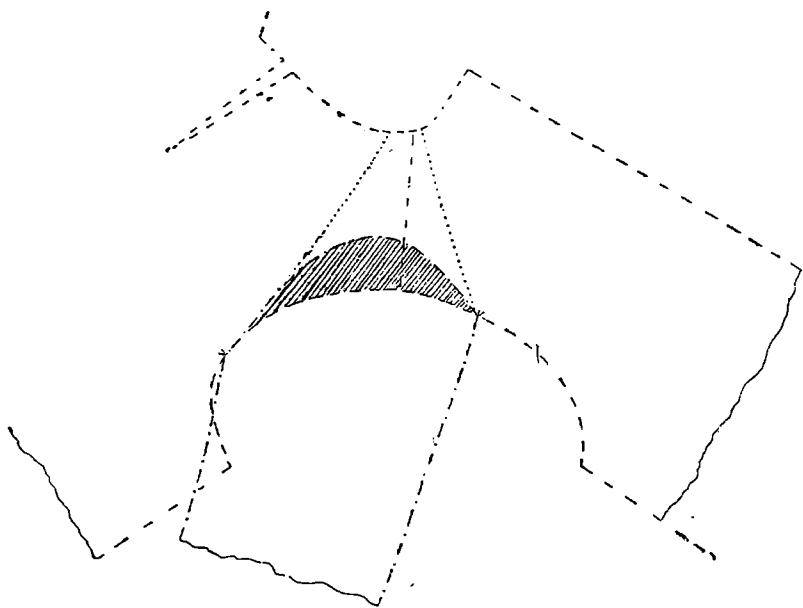


FIG. 35.

seam on the shoulder, there are now two, each being a continuation of the back and front sleeve seams. This figure illustrates the earliest recorded method of drafting this type of sleeve; and Fig. 36 shows the early system of pattern-making for the three-piece sleeve. Although simple and rather primitive in practice, these old methods really go to the root of all Raglan problems, and they should be studied carefully because of their suggestiveness.

It will be observed that the one-piece type assumes that the arm is a linear continuation of the line of the shoulder: that the arm is in its correct position when raised from the sides. The shaded portion (Fig. 35) shows the piece of the sleeve crown removed and lost in this type. Although numerous ways of reducing this shaded amount have been tried, none has been successful, and it is realised that this is the inherent defect in the one-piece Raglan. If this lost piece of the sleeve crown is to be regained, a seam must be used. Fig. 36 shows a centre seam,

by means of which no loss occurs, and the arm may take its natural position at the side without that unsightly "drag" over the edge of the shoulder.

It is interesting to note that system-makers, even as early as John Anderson of Edinburgh, realised that an easy-fit minimised this vertical deficiency, and that *an addition to the width of the top sleeve also permitted the coat to fall more snugly on the shoulders* and so avoid that bugbear of many early Raglans—the collar standing away from the neck. (We remember many collars being removed and shortened, when the only effective remedy was to increase the pitch-to-pitch over-shoulder measure.) To-day an addition is made to this dimension when drafting any of the Raglan types.

Many systems make a fundamental error in drafting the outer sleeve with a fixed quantity between the shoulder "horns" for all sizes. This assumes a certain *fixed shoulder shape* for the slim and stout, the girl and the matron. It must be remembered that

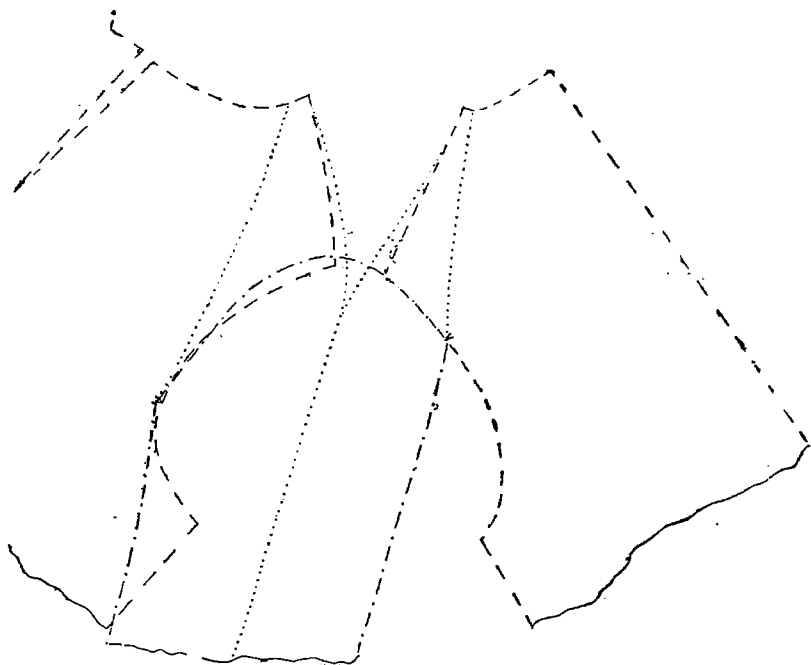


FIG. 36.

it is the curved seam running over the shoulder which determines the shape in that part of the garment: a fairly straight seam will connote sloping shoulders; a rather curved seam will be needed for square shoulders. No two form types have the same shape of shoulder: a fixed quantity between the horns may therefore be ruled out as a reliable method of constructing variable shoulder shapes.

Keeping in mind these considerations, the question is posed: how may the pieces removed from the back and front be added to the sleeve, so that shape and size are adequate and ample and the style characteristics of the garment secured? *It is suggested that they may be drafted on the sleeve pattern if it is remembered that each of these pieces has size and shape peculiar to itself, and that these dimensions may be correctly transferred from the shoulder to the sleeve.* The method is illustrated in Figs. 37, 38 and 39, and it should be stressed that *it begins with the basic sleeve, adds something to the width of the sleeve crown, and places the agreed parts of the back and front in their correct positions.*

The method assumes that the parts of the shoulder to be added to the sleeve have *size* which can be measured, and *shape* determined by their relative length and width. They can be best transferred from the body of the garment to the sleeve top by means of compasses, a method so much more accurate than the old method of "sweeping" with tape measure and chalk.

Detail of Three-Piece Raglan Sleeve.

(Woman's Street Coat. No seams allowed.)

(Fig. 37 a.)

The sideseam of the coat is placed midway between back and front of scye.

$$FF^1 = \frac{1}{2} \text{ in.}$$

$$QQ^1 = 1 \text{ in.}$$

$$J^2 = \text{lowered sleeve pitch: arbitrary amount.}$$

$$HR^2 = \text{amount the scye is lowered.}$$

$$JJ^1 = \text{not a fixed amount: it depends entirely on the run of seam } IF^1.$$

(Fig. 37 b.)

$$OA = \frac{1}{1\frac{1}{2}} \text{ sc.}$$

$$OR = \frac{1}{3} \text{ sc.}$$

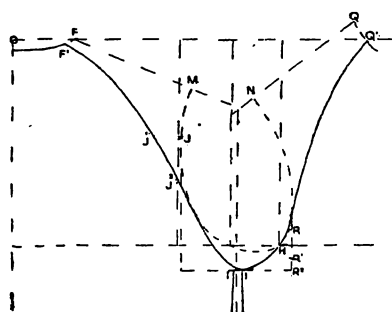


FIG. 37 a.

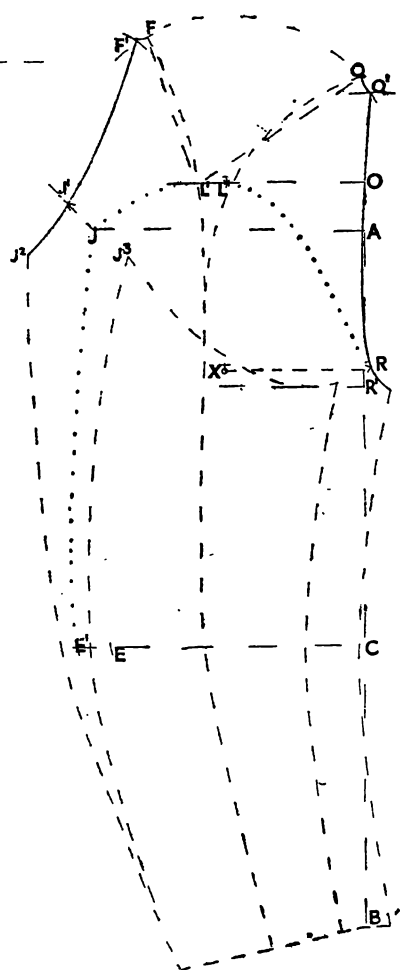


FIG. 37 b.

RR^1 = half the amount the scye has been lowered.

RB = length of sleeve.

C = midway RB .

Measure scye $JMNR$ and add 1 in. Transfer this measure to sleeve RJ .

X = centre of sleeve crown on scye line.

A line is drawn from X through J . The reason for this direction of line can be seen in Fig. 36.

JJ^1 on sleeve = JJ^1 on back of coat.

Measure back shoulder and describe an arc, pivoting on L .

Measure J^1F^1 on coat and reproduce on sleeve J^1F^1 .

Measure coat RQ^1 and reproduce on sleeve RQ^1 .

J^1J^2 = lowered back pitch.

LL^1 = 1 in.

F^1F = F^1F on coat.

Q^1Q = Q^1Q on coat.

Draft the underside as for a normal sleeve.

Detail of Two-Piece Raglan Sleeve.

(Woman's Street Coat. No seams allowed.)

(Fig. 38a.)

The scye is lowered from breast line to point R^2 .

FF^1 = $\frac{1}{2}$ in.

QQ^1 = 1 in.

Both these quantities are arbitrary amounts.

(Fig. 38b.)

OA = $\frac{1}{12}$ sc.

OR = $\frac{1}{3}$ sc.

RR^1 = half the amount the scye has been lowered.

YZ = length of sleeve.

Measure scye $JMNR$ and transfer this coat scye measurement, plus 1 in., to sleeve RJ .

A line is then drawn from Y through J .

JJ^1 on sleeve = JJ^1 on coat.

Measure back shoulder MF on coat and describe an arc, pivoting on L .

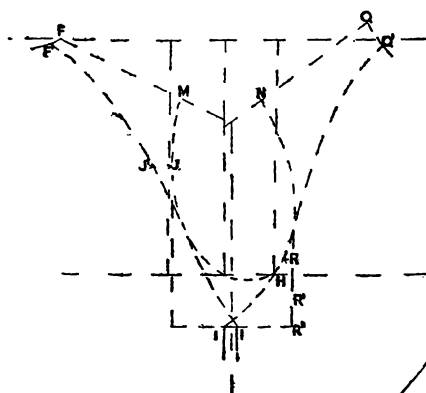


FIG. 38 a.

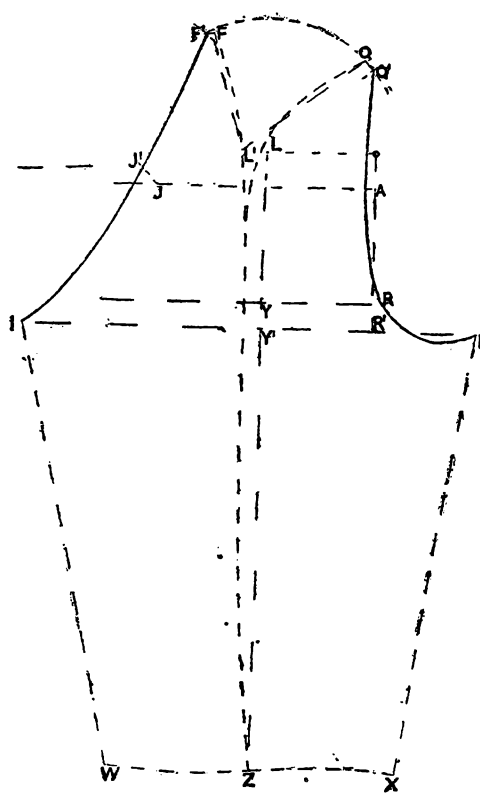


FIG. 38 b.

Measure J^1F^1 on coat and reproduce on sleeve by an arc.
 Measure RQ^1 on coat and reproduce on sleeve by an arc.

$LL^1 = 1$ in.

$F^1F = F^1F$ on coat.

$QQ^1 = QQ^1$ on coat.

$J^1I = J^1I$ on coat, plus $\frac{1}{4}$ in. for ease.

$RI = RI$ on coat, plus $\frac{1}{4}$ in. for ease.

$WX =$ width of cuff equally spaced from Z .

Centre sleeve seam arranged as shown.

Detail of One-Piece Raglan Sleeve.

(Woman's Street Coat. No seams allowed.)

(Fig. 38 *a*, as for Two-piece Raglan sleeve.)

(Fig. 39.)

$$OA = \frac{1}{12} \text{ sc.}$$

$$OR = \frac{1}{3} \text{ sc.}$$

 RR^1 = half the amount scye has been lowered.

Measure $JMNR$ and transfer this scye measurement, plus 1 in., to sleeve RJ .

Draw line from Y through J .

L = midway AJ , therefore centre of sleeve crown.

$JJ^1 = JJ^1$ on coat.

Measure J^1F^1 on coat and describe arc J^1L^1 .

Measure RQ^1 on coat and describe arc RL^1 .

$L^1L^2 = 1\frac{1}{2}$ ins., an arbitrary amount allowed for easing the sleeve on to the shoulder of the coat. This amount should not be exceeded except for very special reasons.

Draw a line through L^2 parallel to line YJ , and reproduce on this line F^1 and Q^1 , i.e. $1\frac{1}{2}$ ins. in this case.

Shape from this line, keeping in mind that a part of the gorge is being drawn.

$J^1I = J^1I$ on coat, plus $\frac{1}{4}$ in. for ease.

$RI = RI$ on coat, plus $\frac{1}{4}$ in. for ease.

WX = width of cuff, shaped as shown.

The Deep-Scye One-Piece Raglan Sleeve.

(A variation of the previous type of sleeve.)

(Figs. 39 *a* and *b*.)

The example chosen is fairly typical of a group of garments used by men and women when shooting or fishing. It is cut on ample lines, permitting free movement: protection without restriction. The arms must be free and it must be possible to raise them without lifting the coat in the movement. There must be the maximum of "lift" under the arm, and this is arranged:—

(a) By deepening the scye. The example gives 5 ins., but this is a variable quantity.

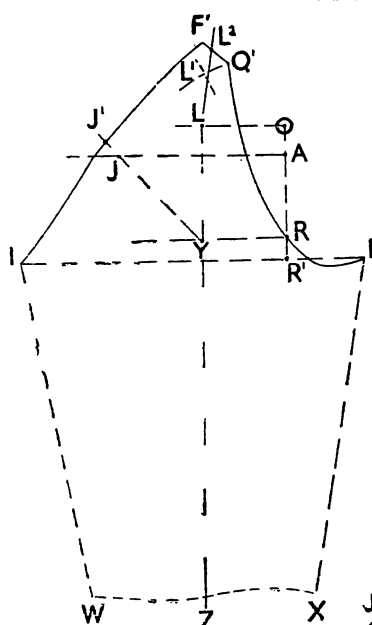


FIG. 39.

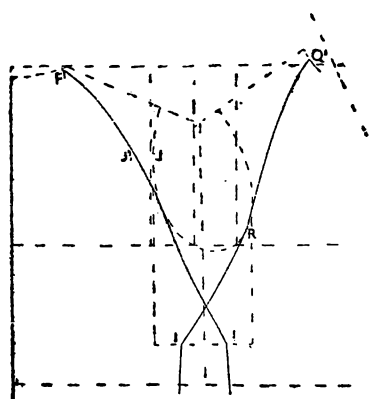


FIG. 39 a.

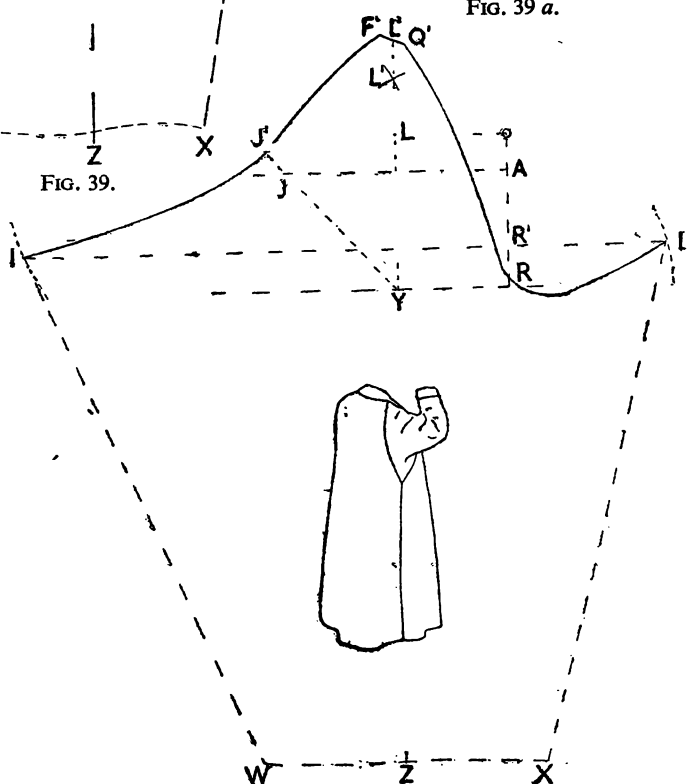


FIG. 39 b.

(b) By increasing the overlay of front and back at the sideseam by an amount not exceeding half the amount the scye has been deepened. *II* in Fig. 39 *a*.

(c) By increasing the basic distance *RJ* by 1 in. or a little more.

(d) By arranging the under sleeve to provide the desired amount of "lift".

Construction. In general, the construction of the one-piece Raglan in Fig. 39 should be followed. The exception concerns the under sleeve only. In Fig. 39 the scye base had been deepened 2 ins. while the under sleeve had been deepened 1 in.—i.e., half the amount—and that is a sound rule for overgarments of that type. Fig. 39*a*, however, shows a much greater lowering of scye base, and the under sleeve would be deficient in "lift" if it were lowered at all. *On the contrary, it is necessary in construction to add above the breast line rather than to subtract below it.* *R*¹, therefore, will be raised above point *R*, to provide the necessary length of underarm seam *IX* and *IW*. In this case an arbitrary quantity, one-third of the amount by which the scye has been deepened, has been taken, but this may be varied in either direction: if *R*¹ is raised, more lift is provided; if lowered, less lift is given; but it should never come lower than point *R* in this type of garment.

When the arms are raised there is complete freedom of action without the coat being lifted. When the arms are at rest, however, there is surplus material under the arms. This is not objectionable; indeed, it has become a style feature of the garment whose claims to utility and function dominate the design. All garments of this sleeve type are made in waterproof fabrics, from cotton gabardines to 25-ounce woollens. The design very seldom includes a belt.

The Kimono Coat.

(Fig. 39 *c*.)

This is a return to sleeve origins (see Figs. 28 *a* and *b*). The sleeve of the Kimono is a part of the garment and is a twentieth-century survival of a very primitive form.

The current type will have a perfectly straight seam from the neck point to the centre of cuff. Should the seam arrangement

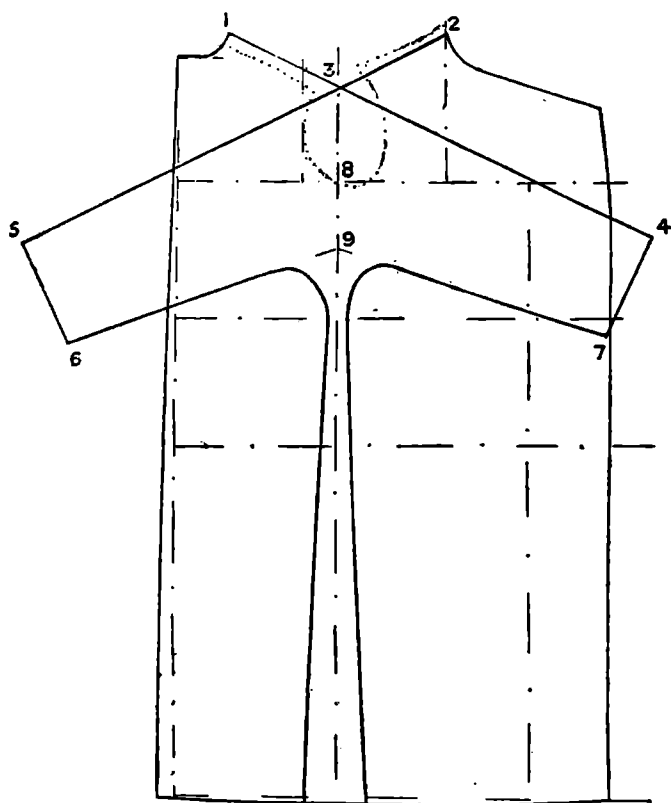


FIG. 39 c.

of the upper part of the coat permit of this seam being omitted, and the fold of the material taking its place, then the fold will be perfectly straight. The sleeve is in linear continuation of the shoulder slope of the garment, and in this fact lie the essence of the style and the pattern construction. The chapter on sleeve arrangement may, then, fitly conclude with details of shoulder and sleeve construction.

Construction.

(Fig. 39 c.)

Woman's coat : size W: sized-up 4 ins. over breast and bus girths.

A special measurement is taken from side neck to centre cuff (1 to 4 and 2 to 5). Basic construction by any reliable system. 1 and 2 = back and front neck points. These should be arranged on the same lateral level. This will entail raising point 1 a little from its normal position, and lowering point 2 by the same amount. 3 = shoulder height, placed exactly half-way between 1 and 2. This ensures the same slope of shoulder and sleeve in back and front.

Draw lines from 1 through 3 to 4, and from 2 through 3 to 5.

1 to 4 and 2 to 5 = neck to cuff measure.

Sideseam construction line squared down from 3, giving 8 and 9.

9 = an empirical point, placed here half-way between breast and waist lines: style will, however, decide its position within sensible limits.

5 to 6 and 4 to 7 = width of cuff.

Arrange drapery at sideseam to harmonise with the design.

The width and, perhaps, the pattern of the material may decide that seams have to be put into the above breast section. The placing of these seams must harmonise with the figure of the wearer and with the style of the garment: they should never be so arranged that it becomes obvious that their position has been dictated by the limitations of the fabric. A very simple coat indeed, the Kimono offers a much wider range of seam arrangement and use of style feature than any similar garment.

CHAPTER VI

THE COLLAR

THE collar is no more, nor less, than the conventional way of finishing the neck of a body garment. Since it became the vogue in the eighteenth century it has undergone many changes: the French contribution of the *revers* has kept its place in our dress scheme, changing its form from time to time. If we can be said to be irretrievably committed to any style feature, the *revers*, or lapel, is the example: but its lines are never static for long. The types of collar which have become settled in our garments are those which are constructed on the simple bases; not to be meticulously copied without variation. They should be *worked from rather than worked to*: but they are basic, and should therefore be understood in principle. Let them be regarded, then, as starting-points from which the designer with imagination sets out on his quest for the novel and the saleable.

The base, and starting-point, for all collar construction is the garment line which runs from the nape at the back to the sternal notch (fonticulus) at the front, corresponding to the base of the neck column.

It should first be noted that the garment approaches this line on different planes; the back vertically, the shoulder nearly laterally, the front almost vertically.

The part of the collar which joins these parts is called, for obvious reasons, the "stand". If the collar is simply a narrow upright band of material sewn to the neck, then the collar will consist of a stand and nothing more: it will follow the dimensions and form of the neck column in length and height.

The Stand Collar.

This is the simplest of all collar types and, in men's garments, is used in uniforms of all types: in women's wear it is regarded as a style feature, and in various forms is incorporated in a wide variety of garments.

(Fig. 40.)

Construction. So that the upper edge of a stand collar may

not be too long, and so stand away from the neck, it is usual to curve it, slightly at the side neck, and a little more at the back.

2, 3 = half neck girth.

3, 4 = $1\frac{1}{2}$ ins., giving curve value 2, 4. This will be adequate in most cases.

4, 5 = height of collar: a variable quantity depending on type of neck and the style effect desired.

The inexperienced designer should experiment (a) with the curve value of a stand collar, from the simple straight band to a decided curve; and (b) in lengthening 2, 4, by from $\frac{1}{4}$ in. to $1\frac{3}{4}$ ins. and easing this surplus into the gorge between the shoulder seam and a point about $2\frac{1}{4}$ ins. in front.

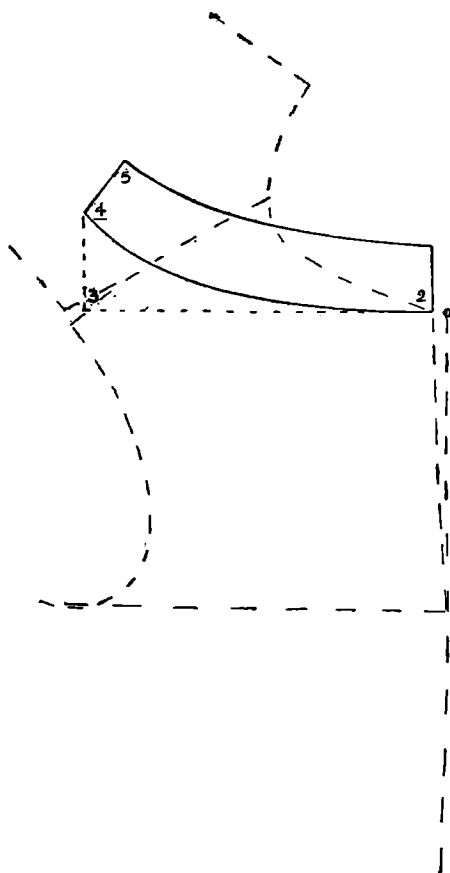


FIG. 40.

The Laid-on Collar.

This "Peter Pan" feature is used almost exclusively in frocks and shirt-waists: its entire lack of sophistication has retained it as expressive of simplicity in Maids' and Misses' ranges.

(Fig. 41.)

Construction. Overlay the back and front as shown: in most cases an overlay of $\frac{3}{4}$ in. at the shoulder will be adequate.

Line 9, 10 = centre front.

Line 10, 2 = neck of garment, without addition or alteration.

Line 1, 8 = collar line which is sewn into the neck of garment: $\frac{1}{2}$ in. is sufficient for this requirement.

Line 2, 3 = depth of collar.

Finish by drawing the shape of collar desired. It will be apparent that the front points offer the widest scope for artistic design. Shaped edges—e.g., scallop—may also be introduced.

The Roll Collar.

In this type, the lapel, or

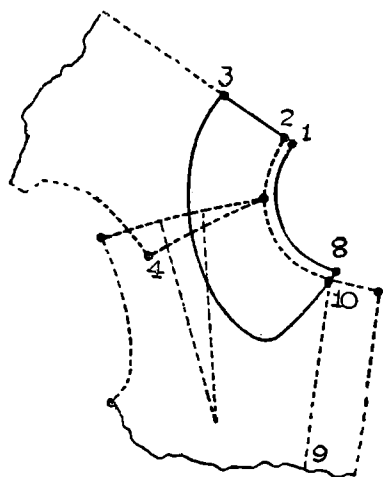


FIG. 41.

revers, forms part of the collar feature. The effective termination of this garment, therefore, is on line 2, 8, 3, which is called the "crease" of the collar, or "crease-row".

The stand of this collar is 3, 4, 8, and the "fall" (a self-explanatory term) 3, 5, 6, 8.

(Fig. 42.)

Construction. Continue the crease-row 2, 8 to 3.

3, 4 = depth of stand; usually 1 in. for Maids' and Women's, and $1\frac{1}{4}$ ins. for Men.

For overgarment $\frac{1}{4}$ in. to $\frac{3}{8}$ in. more.

9, 4 = width of back, plus say $\frac{3}{8}$ in. for easing into the gorge between 8 and 9.

3, 5 = depth of fall, whatever quantity fashion dictates, but never less than $1\frac{3}{4}$ ins. finished.

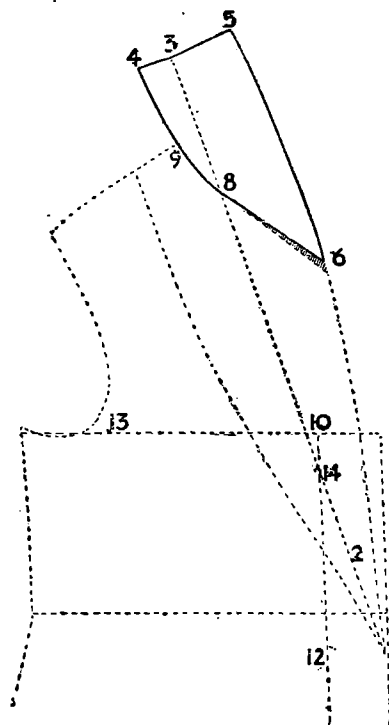


FIG. 42.

To lengthen the fall edge, spring out $\frac{1}{4}$ in. at 5.

This figure illustrates one important point in collar construction, namely, where the lapel is very long, and the lapel crease-row crosses the centre-front line, 10, 12, below the breast line, 10, 13 (at point 14 in this case), the edge of the collar may be a little too long where it lies on the front shoulder. To correct this, a small wedge is arranged, about $\frac{3}{8}$ in. at 6 to nil at 8.

Note.—In Fig. 42 the pattern has been made in the traditional way, with the collar turned up; and it is drawn in this way as a contrast to the succeeding types of collar, which are constructed in the form and position they will assume when the garment is in wear. In Fig. 22 it was shown that a lapel should be constructed in its natural position on the garment as worn: it is here suggested that the same line of reasoning should be applied to collar construction, and that the fall of the collar should be drawn in its relation to the lapel.

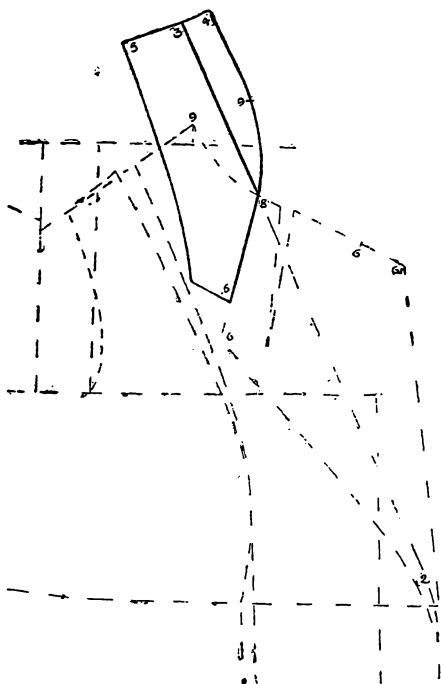


FIG. 43.

The Step-roll Collar.

(Fig. 43.)

This collar, in its single- and double-breasted forms, is the most frequent type applied to men's and women's body garments. The varieties of lapel (Fig. 44) should be noted as emphasising the necessity of (a) first drawing the lapel in its true position on the forepart and then transferring it to the other side of the crease, as in a flat pattern, and (b) relating the fall of the collar to the lapel, both as to size and style.

In a lapel garment the neck-point 9 will be fixed, but the line 9, 8, 6, will be drawn just where style demands that it shall be.

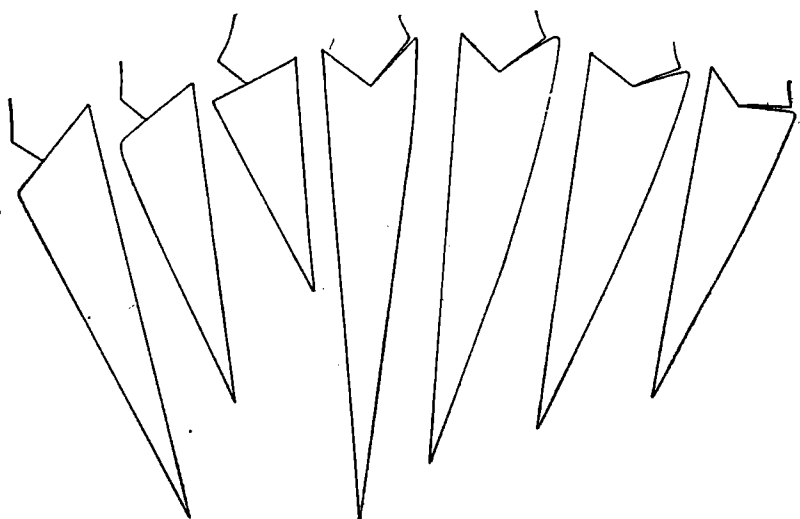


FIG. 44.

Line 8, 6 obviously cannot be correctly placed by any anatomical system; it links lapel and collar and is an arbitrary line whose position is decided by artistry.

Construction. Continue the crease 2, 8, to 3, thus giving the crease of the collar.

8, 9, on collar = 8, 9 on coat neck-line.

9, 4 = width of back neck plus, say, $\frac{3}{8}$ in. for easing into the gorge between 9 and 8.

3, 5 = depth of collar fall, $1\frac{3}{4}$ ins. or 2 ins. will be minima: this quantity will be related to style requirements.

The Double-Service Collar.

(Fig. 45.)

This type involves several features which were not found in the simple types above.

(a) It applies to the bulky overgarment made of heavy fabric with large double-breasted front, and in its first or normal position it has a heavy lapel and collar. In its second position, the lapel buttons across on the opposite front and the collar becomes the close-fitting or "Prussian" type. Thus the collar has two crease rows, one for each position.

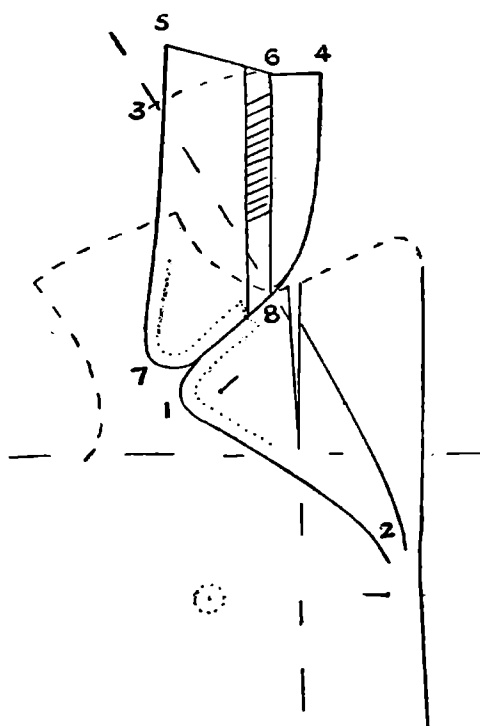


FIG. 45.

(b) The crease of the collar is diverted from the line of the lapel crease. The amount of this diversion is usually accepted as the quantity by which the depth of the fall exceeds the collar stand at the centre back. For example, if the stand is $1\frac{1}{2}$ ins. and that fall is $4\frac{1}{4}$ ins. the amount of this diversion would be $2\frac{3}{4}$ ins. The reason for this diversion is to provide the extra length demanded from 5 to 7. It is the equivalent of a number of small wedges inserted in the fall, with a maximum on the edge to nil at the crease. (The stand is unaffected by this diversion.) This extra fall edge length

would not be necessary if the lapel opened very low: but wherever the lapel crease crosses the centre front line above the breast level, this diversion of crease should be made. This rule applies not only to this type of collar, but to every kind of garment having collar and lapel related.

Separate Stand and Fall.

(Fig. 46.)

In a raincoat of cotton gabardine a collar of the Prussian type is often used. The thin material does not permit of the manipulation with the iron such as would be possible with a woollen fabric, so the collar is cut with separate parts (Figs. 46 *a* and *b*).

Construction. The stand, *A*, is cut as for a normal garment. The fall, *B*, is curved on the crease-row: 2, 3 represents the curve value, in this case $1\frac{1}{2}$ ins. This should be regarded as an arbitrary

quantity to be varied in either direction according to the curve value required.

The diagram is without allowance for seams, which should be left where needed. The outer fall of the collar will, of course, be arranged without a centre-back seam.

Extension of Fall Edge of Collar.

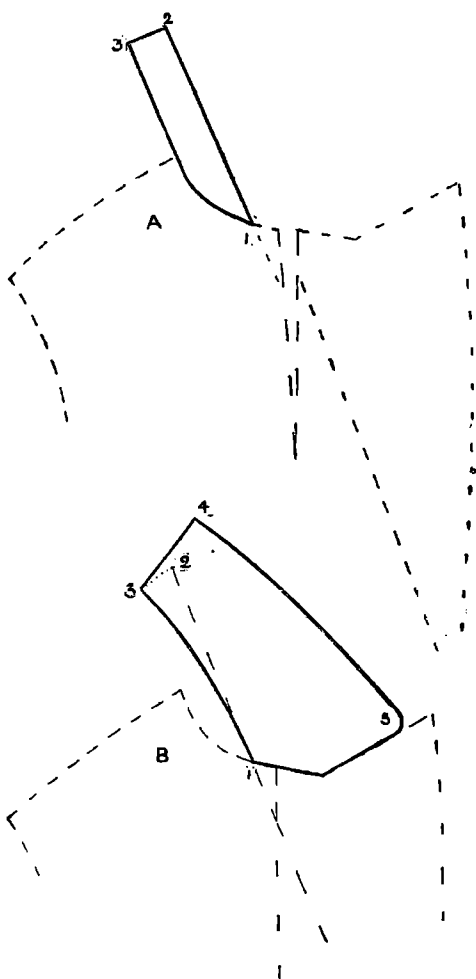
This secures the same result as the previous example, but by different means. It is suited best to a heavy collar of the kind used for a travelling Ulster, and made of heavy fabric (Figs. 47 *a* and *b*).

Construction. (*A*): cut through the collar at 1, 2, which will coincide with the shoulder seam of the garment. Cut again at 3, 4, which will be placed in the gorge 1 in. behind the lapel crease-row. (*B*): the shaded parts show the fall edge extended: the amount here = $\frac{3}{8}$ in.

$\times 4 = 1\frac{1}{2}$ ins. = an arbitrary quantity, which may be varied as required. Seams should be allowed where needed.

Design Possibilities.

One example of unusual type is given as illustrating the possibilities in collar design. Here the collar is "growing on" to the neck of the garment, and is capable of endless variation in



FIGS. 46 *a* and *b*.

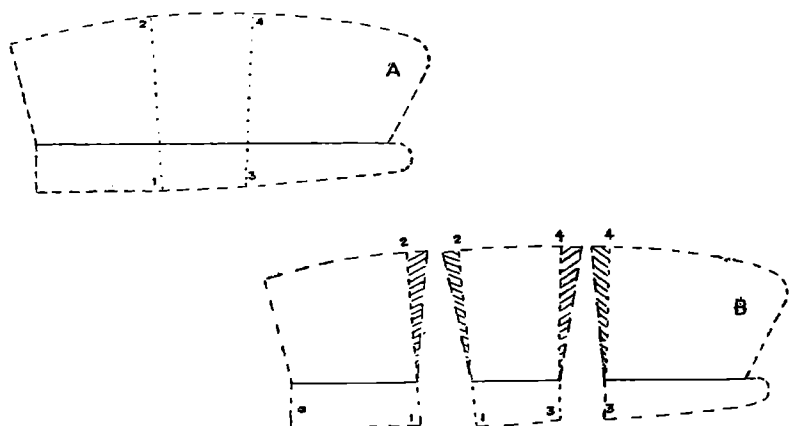
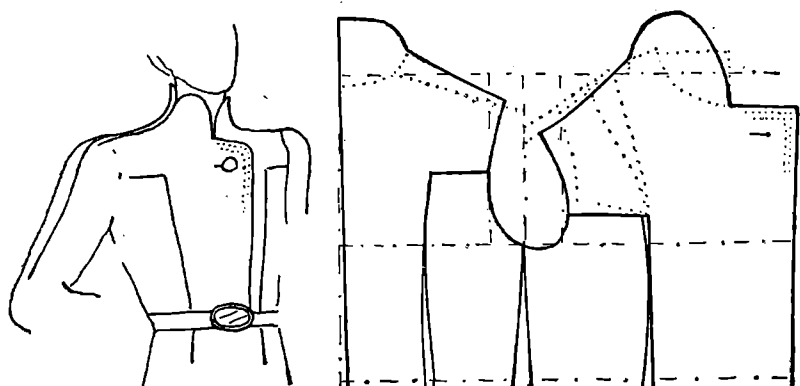
FIGS. 47 *a* and *b*.

FIG. 48.

the street coat group. The diagram (Fig. 48) is self-explanatory.

Further study should include the large number of new collars produced by European and American designers and illustrated in their technical journals.

CHAPTER VII

THE SKIRT AND RELATED GARMENTS

To the student of costume the skirt has a long and interesting history. Oriental in its origin, its modern use, in different form, still indicates its original *raison d'être*. First the scanty loin-cloth was elaborated: slowly it lengthened. Whether this heightening of the mystery of sex by obscuring the female form has proved more alluring to the male than the open-eyed glamour of the sheer silken limb is a question for the social historian rather than the technician. It may, however, be recorded that the highly-developed, classic peoples, for whom dress was much more than mere covering, preferred to support their garments from the shoulders rather than from the waist. The perfect drapery of Greece and the older Eastern peoples was obtained by the long lines from shoulder to hem. The skirt does not admit of such artistry: at its best it is a tube; at its grossest, a mere bunch. Its design possibilities are thus limited by the idea of the garment itself: the designer of skirts may not apply the laws of fitting; he is thrown headlong into almost unrestricted drapery.

The clothing designer may not say, "Here is a code of dress principles; let us apply them to the end that human nakedness may be covered". He begins with costume as he finds it, and looks for some evidence of underlying order and law. The philologist found speech and writing already existent, and from a study of these proceeded to find the underlying laws which were the general rule, and the exceptions which proved them to be the rule. Man's dwellings, at all times and in all countries, show a wealth of variation in their details: yet behind all the obvious differences there is to be detected an underlying, permanent basis of utility and function which unites all the houses of all the peoples; and discovers in them a basic unity: they had empirical beginnings, but they were designed for similar ends, and so have a common constructional basis. It is this constructional base which concerns us: the details of variation for decoration and function pass, and make way for others: the base remains constant.

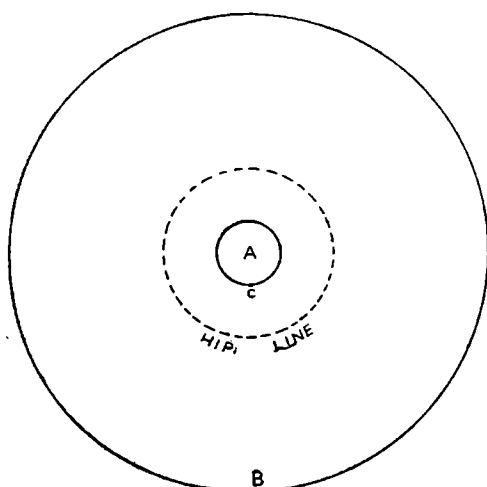


FIG. 49.

Any work on the principles of skirt construction must begin at either of the two extremes of the subject.

(a) It may start with the completely draped garment, consisting of a circular piece of fabric, the hem of which would, in the flat, be the circumference of a circle. The small circle AC (Fig. 49) would fit the waist: CB would be the length of the skirt. The only part of this garment having a dimension of the

body would be the waist, so the garment is controlled on that line only: everywhere below, it drapes—i.e., the fabric, of its own weight and texture, falls into folds. These folds would be equal at front, sides and back, because they are controlled by the regular circular curve of the garment waist line. If the shape of the waist aperture is altered, from the circle, to, say, an oval (to keep to the curved figure) or to an octagon (to diverge into angularity) of the same perimeter, it would be found that the same hem-width would be differently distributed: in the case of the oval it would be thrown to the sides of the skirt, which would stand away from the figure, while the front and back would fall almost without excess drapery. An octagonal aperture would localise the drapery below the angles, leaving the intervening spaces almost plain.

It is thus demonstrated that the hem, having a *circular hem*, needs a *circular waist-line* to properly control it and to artistically distribute the drapery: and it is noted that *the curve value of the hem must be the curve value of the waist*. This law applies to the fullest possible skirt, just considered, or to the tube-like wrap skirt: it applies to every type of skirt the designer has to produce.

(b) An analysis of principles may, however, begin at the other end of the scale: it may examine the least common denominator

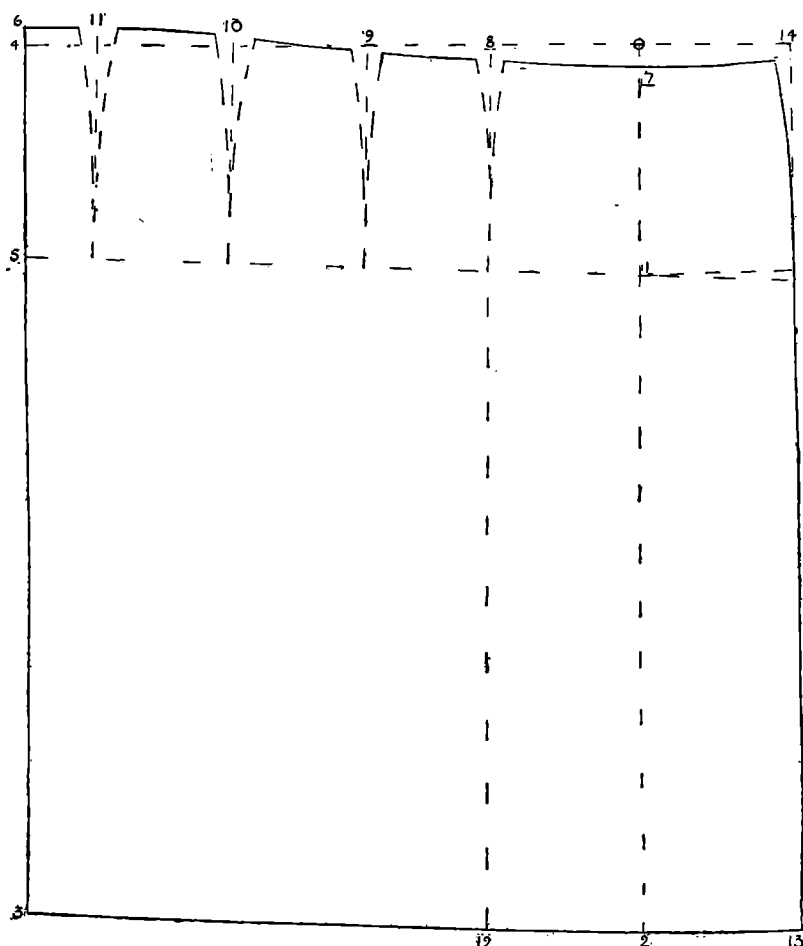


FIG. 50.

of this garment type and regard first the cylindrical skirt towards which most of our modern fashions lean heavily. Here there is a minimum of hem width with a corresponding low curve value in the hem, connoting a similar slight curve of the waist line (Fig. 50).

It, therefore, becomes clear that the curve of the waist-line, its actual existence as well as its value, are bound up with the proper control of the drapery in the garment, which is at its

maximum at the hem. *Waist curvature, then, distributes hem width.*

Thus far, extremes of style have been taken to elucidate a principle. It will, however, be noted that most modern skirts fall between these extremes, leaning towards the latter type. There is one important point which must be made, however, which must be understood although it neither disturbs nor modifies the principle of curvature laid down. The completely circular skirt drapes immediately it leaves the waist: on the line of the hips there is ample excess of drapery. In the modern two- or four-piece types this, of course, does not happen: the skirt is controlled not only by the waist-line, but by the whole section of the garment which lies between waist and hips. From the hips down the skirt is draped: above the hips it must fit "as though I was poured into it". In these intermediate types the hem is controlled by the whole waist-hip section, but this is based on curved waist and hip lines corresponding to the hem curve.

The simplest type of skirt, the single-piece wrap, is merely a straight piece of fabric cut from the roll and placed laterally round the lower trunk and legs. It is not a true cylinder, but rather a complete overwrapping apron: the hem, however, is the same girth as the hips. The legs may move freely because the wrap is not sewn up as a conventional skirt: stride room is, therefore, provided, although hem merely equals hip. Where, however, stride room has to be provided because the long seams are sewn and secured, it must be put in in such a way that (a) the added amount is known, and (b) this added amount is properly provided and correctly controlled.

Fig. 51 illustrates a method of skirt construction which the author has used for some years. It sets out, and consciously applies, the *two principles concerned*, namely, (a) *the position of a known amount of stride room, and shows how it may be put into the pattern when drafting*: (b) *shows how curvature of skirt waist controls and balances the hem drapery, and how it is, in itself, a variable quantity, but is, however, proportionately related to the amount of drapery it has to control.*

A rectangle is drawn having the length of the skirt 0, 2 (which is the centre front), and a width of half hip-girth plus tolerance. Now add whatever stride room is needed at 2 and 3: in this case 3 ins. are added at each point—4, 6 and 7. Draw lines from

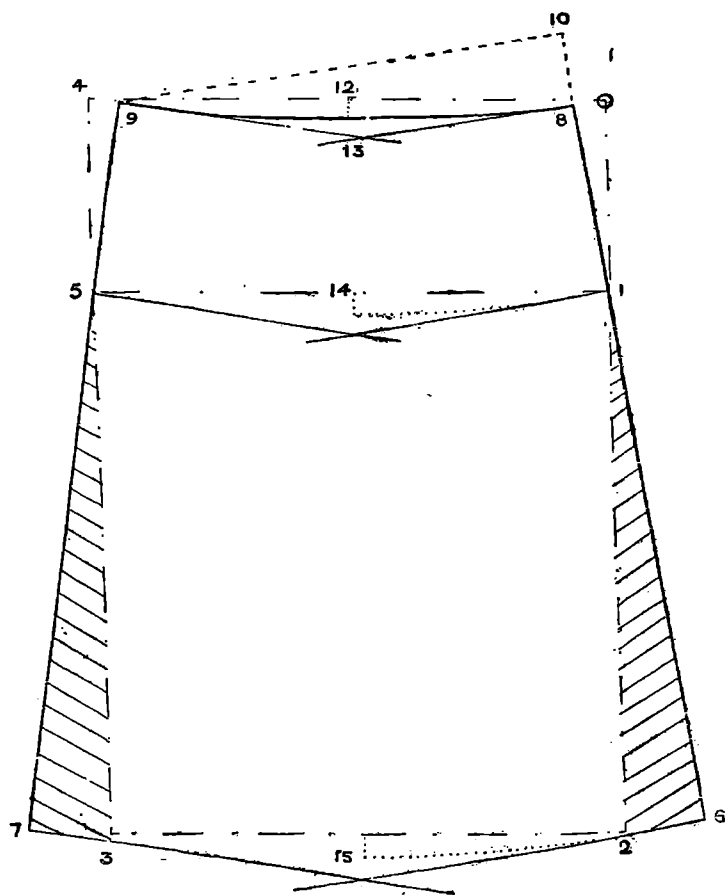


FIG. 51.

6 through 1, giving 8 and 10; and from 7 through 5, giving point 9.

The two triangular wedges 1, 6, 2 and 5, 7, 3 are shaded to show the amount of stride room added: in this example 6 ins. on the half skirt; 12 ins. in all.

Stride room is the amount by which the circumference of the hem exceeds the hip girth, and is put in to permit free movement. It is regarded as important that the designer should know exactly how much stride he is putting into his skirt pattern. At this stage of the pattern these definite amounts of excess drapery

are localised at the centre front and centre back. They cannot, of course, be permitted to stay there: they must be evenly distributed round the hem of the skirt, just as the cover of a closed umbrella is distributed round its central shaft. This is effected by curving the skirt waist. In wear, this curved garment line mates with the straight waist-line of the body: thus the distribution of drapery is general and complete.

Now in a formal skirt system the draughtsman would begin by drawing line 10, 8, 1, 6, making 8, 1, the hip depth, and 8, 6, the front length of the garment. 10, 8 would be an arbitrary quantity apparently unrelated to any other dimension in the skirt. The line 6, 1, 8 has been continued and squared by 9, giving the triangle 10, 8, 9. The angles at 8 and 9 are thus determined; and if a greater amount of drapery were put in at 6 and 7, point 10 would be farther from 8, and the angle at 8 and 9 would be less and greater respectively. The point to grasp clearly is that quantity 10, 8 increases with the amount of stride room, and decreases as hem width is reduced, disappearing entirely when the hem is the width of the hip.

This, then, is the reason why most existing skirt systems begin by placing point 10 as starting-point and then fixing point 8 at an arbitrary distance, dependent on the amount of "hem over hip" required by the style. What data, then, exist by which the variable quantity 10, 8 may be confidently decided? Not the amount of hem drapery, for this depends on skirt length: for example, in Fig. 51, the skirt, 27 ins. long, has 12 ins. extra hem, which gives a certain shape to the garment. By merely shortening the skirt, hem is reduced; by lengthening, it is increased. Length and amount of drapery are, therefore, unreliable for the purposes of construction. Nor can any comparison of waist and hip girths give quantity 10, 8 in every skirt style.

The only sound method of making the pattern is to work to definite data for lengths, and for girths of waist, hip and hem; and any use of an arbitrary factor at 10, 8 for fixing a hem width cannot be recommended. So long as a soundly based method exists for putting into the skirt a desired hem girth, and of correctly distributing this hem, then no system containing an element of uncertainty should be used.

In Fig. 51 lines have been struck off at right angles to the front and back lines at waist, hip and hem. These will give a sure

guide to the correct curvature of these lateral lines: at 12, 13 the curve is placed midway: so at 14 and 15. In this connection Figs. 11, 12 and 13 should be reviewed, where the principle of drapery control is demonstrated. In every case where a spread of hem, in any garment, has to be controlled by a lateral seam, this rule should be applied. The whole purport, then, of Fig. 51 is to demonstrate the two principles stated above: the means of shaping the waist-hip section have not been dealt with.

The One-Piece Wrap Skirt.

This is the ancestress of all skirts: merely a piece of fabric placed round the hips, wrapping over at the front. Primitive as it is, it has been adapted for wear under elemental conditions; walking, and the pursuit of game with gun, and ball with club. Although a fabric-cylinder from hip to hem when at rest, the open wrap permits the freest movement. It is usually made in the heavier, rougher tweeds: Donegal, Cumberland, Harris and the like; and both material and style demand easy fitting.

Construction.

(Fig. 50.)

Lengths—29 ins. front; $29\frac{1}{2}$ ins. back; waist 28 ins.; hip 38 ins.
(No seams allowed.)

Square lines 0, 4 and 0, 2.

1 = 7 ins. below 0.

2 = front length from 0.

1, 5 = half hip plus (for this type) $1\frac{1}{2}$ ins. tolerance.

Lengths on hem line are from line 14, 0, 4 and are all the same.

The size of front overwrap is a matter for design, but it should bear a relationship to general size. It should, however, be kept as narrow as permissible by style, and the example given is 10 ins., *i.e.*, 0, 14 = 5 ins.

The drawing of the waist-line conforms to the anatomy of the figure: (a) the back length is longer than the front ($\frac{1}{2}$ in. in this case), and this should not be added at the hem, but should be placed where actually needed, that is, on the curved contour-length of the seat-waist section. 4, 6 therefore = $\frac{1}{2}$ in.

0, 7 = $\frac{1}{2}$ in. This quantity is justified by this reasoning: the skirt is not equally supported by the waist-band at all points.

At the back and sides it is prevented from leaving the waist-line by the tough bone and muscle structure below, which increases in girth immediately below the waist. Across the front, however, the abdomen is normally flat, naturally, or by corset control, and the heavy double wrap of the front would sag by its unsupported weight and form an unsightly lateral fold below the front waist. The removal of $\frac{1}{2}$ in. at 0, 7 corrects this tendency.

Waist Suppression.

If 7, 4 is measured it will be found to be $20\frac{1}{2}$ ins., *i.e.*, exactly half the hip girth plus tolerance. The half-waist measurement is considerably less, being in this case 14 ins. It would be unwise to remove the difference of $6\frac{1}{2}$ ins.; some of this, say 1 in., should be eased on to the waist-band, especially across the front 8, 14. This leaves $5\frac{1}{2}$ ins. to be removed; and it may be done by (a) fulness, (b) pleats, (c) darted seams. (a) is used very seldom indeed, and only for very special reasons. (b) is quite suitable for a garment of this type, although the bulk of pleats in a heavy fabric must be considered. This leaves (c), which may be regarded as the normal means.

Assume that the $5\frac{1}{2}$ ins. are to be removed at four darts. This does not mean that $1\frac{3}{8}$ ins. shall be taken out of each: the matter is not so simple as that. Shape in the lumbar region must be created by these darts. If the figure is flat in the back hip and very curved on the side, then less shape will be needed at the back and a great deal required at the side, giving small quantities at 9, 10, 11, and a large suppression at 8. On the other hand, the needs of the figure may dictate the reverse: it is purely a question of shape. In this case $1\frac{1}{2}$ ins. have been removed at 10 and 11, and $1\frac{1}{4}$ ins. at 8 and 9, which gives a shape appropriate to the normal form.

In deciding the length of darted seams or pleats, the length of the sweater, jacket, etc., should be considered: in any case they should never exceed $6\frac{1}{2}$ ins. below the waist.

The Two-Piece Skirt.

This general utility garment, suitable for street and business wear, is readily adaptable to all uniform purposes. Its prim line and minimum of seams suggest a severe tailored appearance.

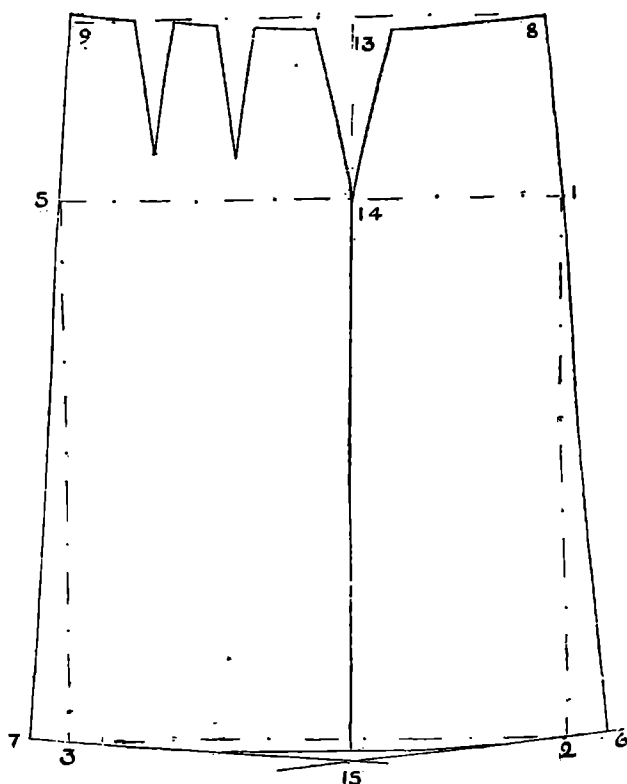


FIG. 52.

Construction.

(Fig. 52.)

Lengths—28 ins. front; $28\frac{1}{2}$ ins. back; 26 ins. waist; 37 ins. hips.

Rectangle—1, 2, 5, 3.

1, 5 = half-hip girth, plus 1 in. tolerance.

2, 6 and 3, 7 = $1\frac{1}{2}$ ins., making hem 6 ins. larger than hip.

1, 8 and 5, 9 = 7 ins.

Raise waist-line at 9, difference between back and front lengths = $\frac{1}{2}$ in. in this case.

Curvature at waist and hem as in explanatory diagram, Fig. 51.

14 = take a point half-way 1 to 5 and place point 14 about $1\frac{1}{2}$ ins. to the front of it.

Arrange 15 in the same way, about $1\frac{1}{2}$ ins. in front of a point midway 6, 7.

The amount to be removed at the waist, at the sideseam and in the darts will be decided by the same factors as in the one-piece skirt. Measure up 8 to 9, and subtract the actual half-waist, allowing 1 in. to be eased on to the band.

The shape of the figure will decide where the greater and lesser suppressions are to be made. The exact amounts to be removed can be found by following the method of sectional measurement fully described in "Theory". Chap. IX.

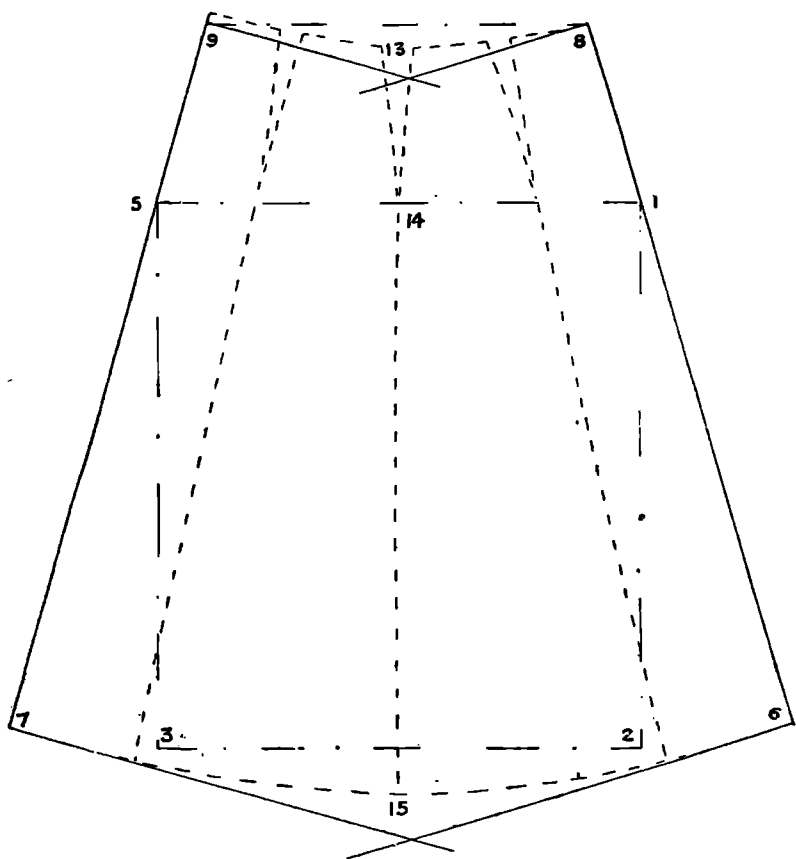


FIG. 53.

The number of darts in the back waist will be decided by reference to style of garment and shape of figure. Fig. 52 has 3 ins. removed at the side by the long seam and 3 ins. divided between two back darts. These figures assume, of course, a rather flat figure with maximum contour shape at the side hip.

The Multi-piece Skirt.

Fashion is the chief determinant of the number of seams a garment may contain. Fig. 53 illustrates a skirt in which the hem exceeds the hip by 6 ins. $\times 4 = 24$ ins.—a considerable hem-spread.

Construction.

(Fig. 53.)

Lengths—28 ins. front; $28\frac{1}{2}$ ins. back; 26 ins. waist; 35 ins. hip. Girth tolerance of 1 in. above half hip girth.

Proceed as in two-piece garment, except that at 2, 6 and 3, 7 add 6 ins. to hem girth. The principles involved are precisely the same. Fig. 54 illustrates a six-piece garment with a hem extended by flared seams: 4 ins. are added at points 8, 12, 10, making a hem 24 ins. greater than that of a plain skirt of the same dimensions. In this case the flare is gradual from mid-thigh to hem, and does not produce excessive curve in the silhouette of the garment. By varying the degree of curve and the point of departure from the straight seam, a wide variety of designs may be produced.

In this design six seams only have been used. It will be obvious that a greater number of seams would secure a wider distribution of hem extension, and also of waist reduction at 7, 11, and 9. Where shape, at waist or hem, is required, a greater, rather than a less, number of long seams should be arranged.

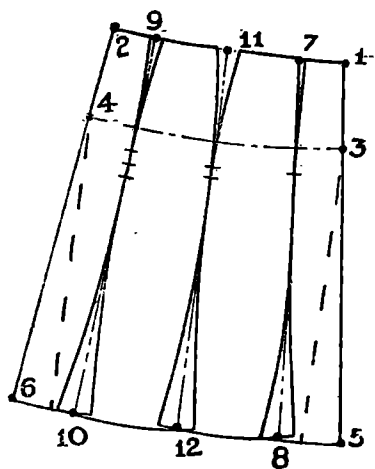


FIG. 54.

The Divided Skirt.

Here the essentially feminine skirt makes its first move towards masculinity by a process of bifurcation. The idea was introduced to Englishwomen as long ago as 1851 by Mrs. Amelia Bloomer, an American citizen; and her name remains attached to the garment she attempted to popularise. The movement for the emancipation of woman gave us, within nineteen years, Bloomers and the Married Woman's Property Act, the sartorial and juridical expressions of a common sentiment which, indeed, has not yet worked itself out to finality.

The construction of the garment is of great interest as showing the relation of skirt and trousers. Fig. 55 clearly indicates (a) the basic skirt and (b) the addition to this base for bifurcation. In this garment it is essential, to correct hang and for comfort in wear, that the crutch of the skirt should fit fairly to the fork of the body: not too closely, but fairly.

Construction.

(Fig. 55.)

Measures— $33\frac{1}{2}$ ins. length; 11 ins. body-rise; 27 ins. waist; 36 ins. hip. Scale = half-hip = 18 ins. Drafted net.

Draw line 1, 2, 3.

1, 2 = body-rise—11 ins. in this case.

2, 3 = balance of length = $33\frac{1}{2}$ ins. — 11 ins. = $22\frac{1}{2}$ ins.

2, 4, 7 at right angle to 2, 3.

2, 4 = half hip, plus $1\frac{1}{2}$ ins. tolerance.

16 = 1 in. in front of a point midway 2, 4.

5 = 15° seat angle arranged on line 16, 4.

16, 5 = 16, 4. Continue line to 8.

2, 7 = one sixth scale, plus $\frac{1}{2}$ in.

5, 8 = one sixth scale, plus 1 in.

It will be noted that both these quantities are larger than would be required in a normal pair of trousers, but the clean hang of the garment demands ample room here.

6, 5, 9 = squared off 16, 5.

3, 10 = 2, 7, plus 3 ins.: an arbitrary quantity depending on style and amount of drapery.

9, 12 = 5, 8, plus $4\frac{1}{2}$ ins.: again an arbitrary quantity.

5, 6 = body rise.

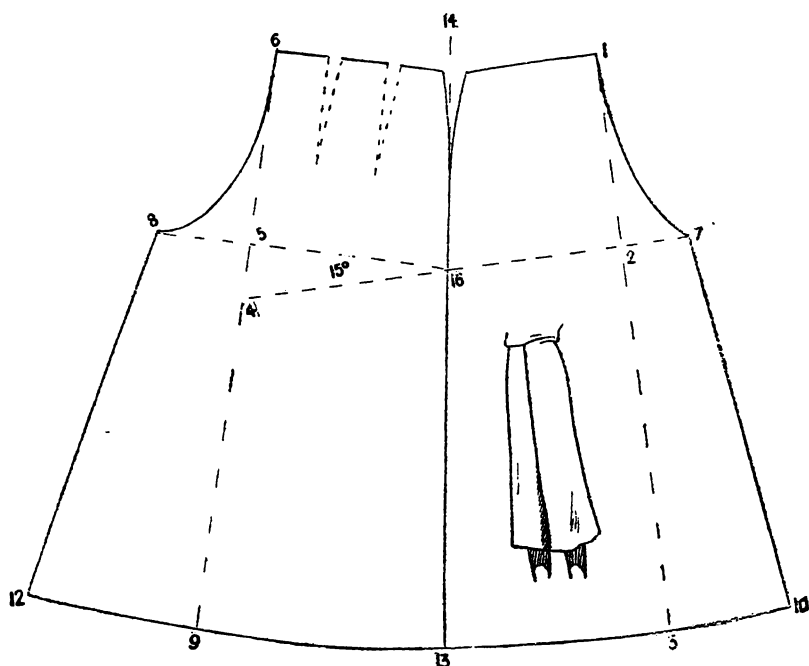


FIG. 55.

Waist reduction as for a simple type of skirt. Fastening: side placket as for plain skirt.

Slacks for Work and Play.

In this garment bifurcation is complete and is the outstanding style feature. For work and play they have proved serviceable, and are now a part of every woman's wardrobe: a far cry, indeed, from Eve's "apron of leaves".

In construction they follow the normal method of drafting leg garments for men: the front is first laid down; and the back is a replica of the front, with the important addition of a variable wedge of material to cover the contour length of the mass of gluteal muscles. In "Theory", Chap. IX, this method of construction has been demonstrated and justified as simple, logical and effective.

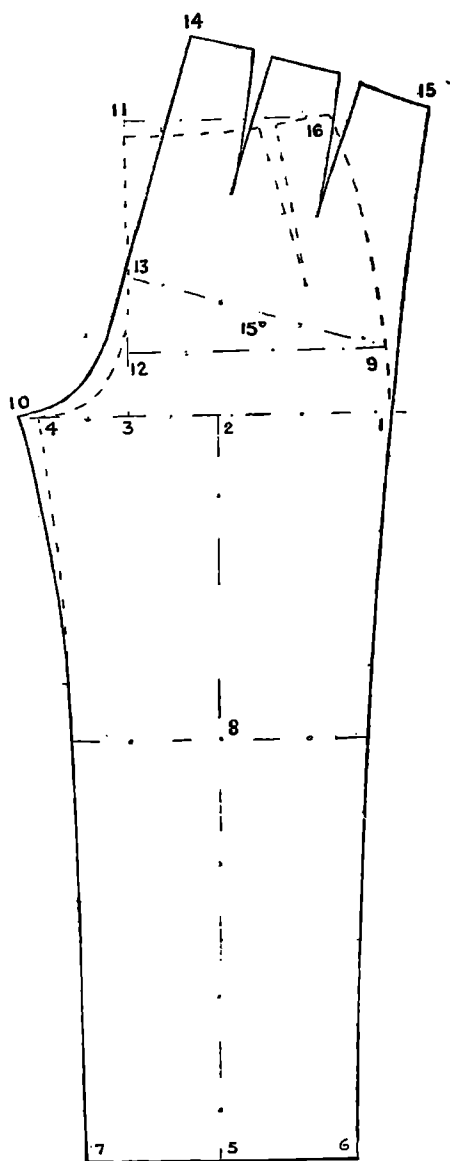


FIG. 56.

Construction. (Fig. 56.)

Measures—Leg 29 ins.; body-rise $11\frac{1}{2}$ ins.; waist 27 ins.; seat 38 ins., plus 2 ins. sizing up for style and ample fitting = 40 ins.

Scale = half seat = 20 ins.; hem 21 ins.

No measure need be taken for the knee; a flowing line from fork to hem is more desirable than any fixed knee girth.

Drafted net (Fig. 56).

The front:

Square lines 2, 5 and 1, 2, 4 at right angles.

2, 5 = leg length.

2, 1 = $\frac{1}{3}$ of scale.

2, 3 = $\frac{1}{6}$ of scale.

3, 4 = $\frac{1}{6}$ of scale, plus $\frac{1}{4}$ in.

3, 11 = body rise.

11, 16 = $\frac{1}{4}$ of waist, plus amount for front dart, say 1 in. in this case.

Line 9, 12 is $\frac{1}{6}$ scale less $\frac{1}{2}$ in. above fork line, and is assumed to be the greatest girth of seat.

5, 6 = $\frac{1}{4}$ of hem width.

5, 7 = $\frac{1}{4}$ of hem width.

If, for any special reason, a knee measure must be applied, fix the knee at 2 ins. above half the leg length. In this case, 2, 8 = $12\frac{1}{2}$ ins. and 8, 5 = $16\frac{1}{2}$ ins.

At point 11 drop the front $\frac{1}{2}$ in.

The back:

The leg is a replica of the front, except:—

4, 10 = 1 in. for stride room in the fork. For sports slacks this quantity should be maintained: slacks for street wear may have a slightly reduced amount, say $\frac{1}{2}$ in. or $\frac{3}{4}$ in., because movement makes a less demand.

Arrange a seat angle of 15° on line 9, 12.

9, 13 = length 9, 12, plus 1 in.

13, 14 is squared off line 9, 13 and length 13, 14 = 12, 11.

14, 15 = balance of waist girth measure, plus amounts for shaping darts. The reduction of the waist by darts and seams should proceed as for skirt. There is no essential difference between the lumbar region of the skirt and of the trousers.

Complete the outline as illustrated.

This garment will normally fasten by "Zipp" fastener in the front dart.

Note.—Whenever the seat girth measure, taken fairly on the figure, is increased, for purposes of hang and balance in pleated or darted top garments, or for easiness of fit, in plain top types, the scale should be based on the increased girth; thus ensuring that the excess is distributed proportionately throughout the girth quantities.

Riding Breeches.

The same basic construction is applied to riding breeches. The modifications are those required for (a) the saddle position and (b) the ample drapery of the thigh converging to a very close fit from knee to calf.

(a) Fig. 57 shows front and side positions in the saddle. 1 is the spine, 2 the thigh, 3 the lower leg. Whatever garment may fit when standing or walking would be ill-adapted to riding. The following modifications of the basic system must therefore be made:

Leg opened by moving centre leg construction line outward $1\frac{1}{2}$ ins., providing more length from fork to knee.

More seat room, given by a greater seat angle: 24° instead of the normal 15° .

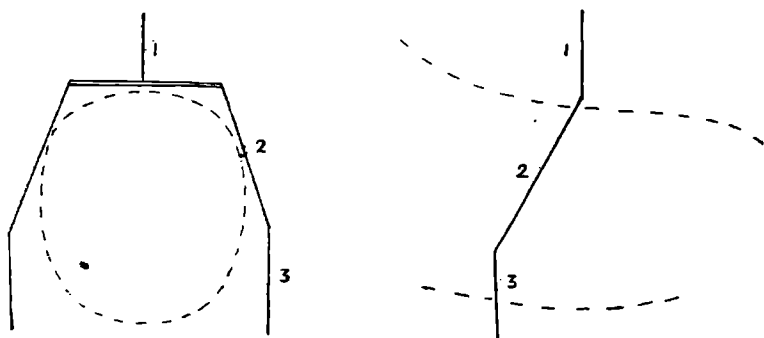


FIG. 57.

Front lengthened over the knee, and back shortened under the knee, to provide for the bent position of knee when mounted, and because the garment is closely gripped to the leg below the knee, permitting no upward movement to relieve strain over the knee-cap.

Construction.

(Fig. 58.)

Measures—11 ins. body-rise; $12\frac{1}{2}$ ins. fork to knee; $2\frac{1}{4}$ ins. knee to small; $3\frac{1}{2}$ ins. knee to calf; 27 ins. waist; 38 ins. seat; $13\frac{1}{2}$ ins. knee; 12 ins. small; 13 ins. calf.

Scale = half seat = 19 ins. Drafted net.

The front:

Draw fork line 0, 2.

1, 0 = $\frac{1}{3}$ scale.

1, 2 = $\frac{1}{6}$ scale.

2, 3 = $\frac{1}{6}$ scale, plus $\frac{1}{4}$ in.

1, 7 = $1\frac{1}{2}$ ins. for openness of leg.

0, 4 = $1\frac{1}{2}$ ins. an arbitrary amount for style.

7, 8 = Fork to knee $12\frac{1}{2}$ ins., plus 1 in. for saddle position.

8, 9 = $2\frac{1}{4}$ ins.

9, 10 = $3\frac{1}{2}$ ins.

Line 11, 12, 13 is $\frac{1}{2}$ in. from line 7, 10.

8, 14 = $\frac{1}{4}$ knee girth.

9, 15 = $\frac{1}{4}$ small girth.

10, 16 = $\frac{1}{4}$ calf girth.

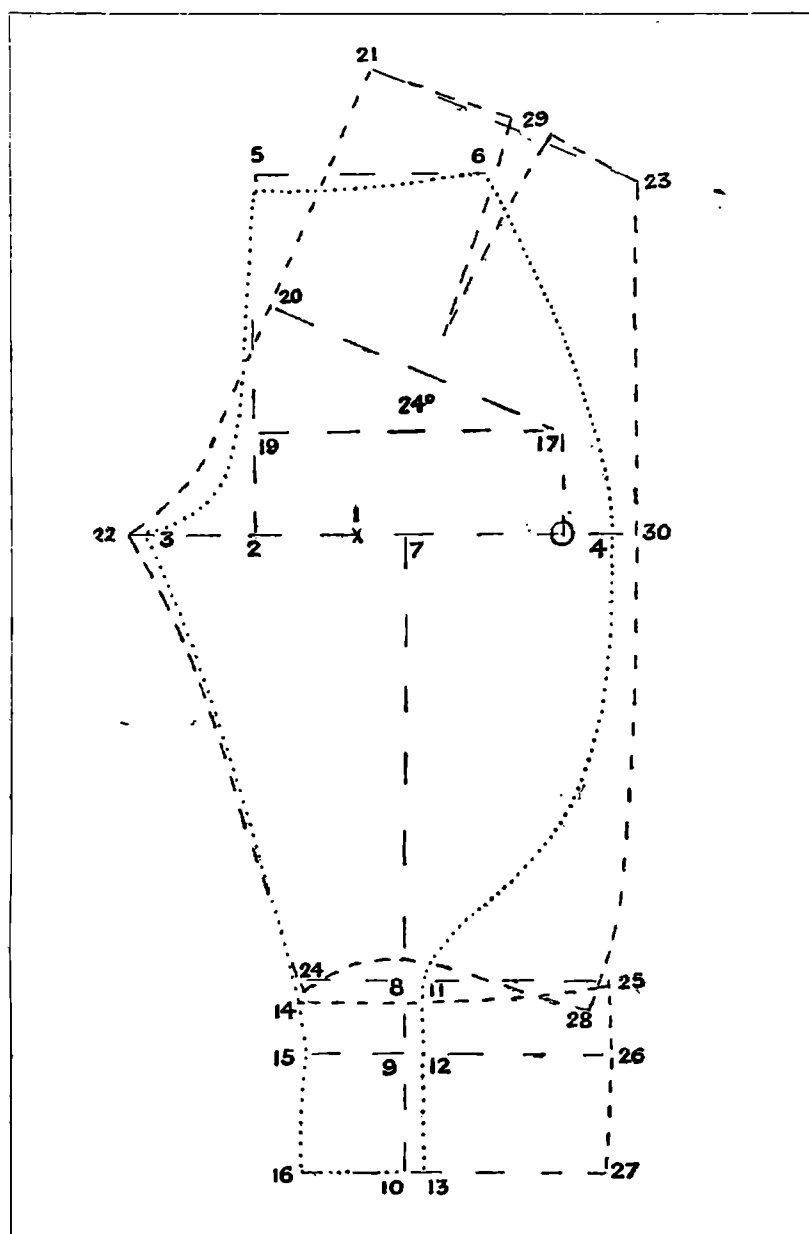


FIG. 58.

2, 5 = body-rise = 11 ins.

5, 6 = $\frac{1}{4}$ waist girth.

Line 17, 19 is $\frac{1}{8}$ scale above line 0, 2.

Drop $\frac{1}{2}$ in. below 5 at front waist.

The back:

3, 22 = $\frac{3}{4}$ in.

Arrange seat angle of 24° above line 17, 19.

17, 20 = 17, 19.

20, 21 = 19, 5.

21, 23 = $\frac{1}{4}$ waist, plus amount, say $1\frac{1}{2}$ ins., left for dart at 29.

On the inside leg from knee to calf the line of the back part follows the line of the front.

14, 25 balance of knee girth.

15, 26 balance of small girth.

16, 27 balance of calf girth.

Point 14 is $\frac{3}{4}$ in. below knee line: shape seam 14, 25 as shown.

24 is $\frac{1}{2}$ in. above 14, and $\frac{1}{4}$ in. inside front leg line.

24, 28 will measure as 14, 25. Curve the line as shown, leaving aperture of $1\frac{1}{2}$ ins. at least at 8, to clear the under knee.

Point 28 is found by applying 4, 11 less 1 in. (for ease over the knee) downwards from point 30.

Connect 23 to 28 as shown, allowing point 30 to be on a well-shaped side line.

The fastening will be a 7-in. fly, with three buttons, or a "Zipp" fastening of similar length, in the sideseam.

The side-knee fastening may be button, lace or "Zipp".

CHAPTER VIII

CAPES AND CAPED GARMENTS

The cape is one of our oldest garments, yet its final forms have not yet been reached. It illustrates the periodicity of garment fashion better than any other human covering. It is shown, in its primitive forms, on the oldest carved stones, and in its latest expression in to-day's style list. The wealth of variation from its primal simple form through three-score centuries could be dealt with only in many volumes. Even in modern sartorial times few years pass without its reappearance in the wardrobe. All countries had adopted it. It makes demands on its wearer: it must be worn with an air, but it repays in dress effect whatever of grace is given to it.

Like the skirt, its sister, it began as a circular, heavily-draped garment (see Fig. 49). Then seams were put in and the drapery reduced. Originally a detached garment in its own right, it has since been attached to other garments and has become a part of composite costume. Worn with the hood, an essential part of the early capes, it protected head, shoulders and torso. The name it bears in the modern world tells of its ancient function as a covering for the head (*caput*): *cap* and *cape* are merely variants of one word bespeaking one original purpose.

Until quite recent years the cape was equally favoured by man and woman: to-day, however, woman has almost completely annexed it. There are form-types for whom it is ideal in every dress particular.

Every garment is controlled at a part or point of the body: a completely-fitting garment, *e.g.* a man's vest, at all parts, seeing that it contains no drapery in any part, but closely follows the contours of the body. The cape, on the other hand, has excess drapery for the greater part of its area; being controlled only in the small section lying between the base of the neck column and the shoulder ends. It fits the neck line, rests on the shoulder, and then drapes throughout its length. The anatomical points and parts concerned, therefore, are few, and lie closely adjacent. These anatomical points are taken from the base pattern for the chosen figure, and no need arises to approach cape construction

from the point of view of a formal anatomical system. This holds good for patterns of the cape considered as an independent garment of which three examples are given: still more does it apply where a caped feature is added to an outer garment, several forms of which are dealt with.

Here, then, we move a little away from basic pattern drawing towards garment design; from size, shape and fitting to that second dress value, decoration by style feature. For this main reason a group of caped garments has been chosen to apply the rules of draping. It has been assumed that the base garment patterns on which the various styles have been imposed are correct in size, shape and balance: otherwise the derived cape will be faulty.

(a) CAPES

Full, or Circular Cape (for women of normal size).

(Fig. 59.)

The back and front parts of the base pattern are placed together fairly at the shoulder, and the fitting points reproduced at the neck and shoulder.

1, 9, 8 = follows the neck line.

8, 8 = the centre front garment line.

1, 2, 3 = centre back.

1, 3 = cape length at back.

8, 8 = cape length at front = 1, 3 minus 1 in. This assumes that the sternal notch at the front of the neck column is, in the average woman, 1 in. lower than the nape of the neck. In the average male figure the quantity will be $1\frac{1}{2}$ ins. These quantities are based on a large number of normally balanced figures personally examined.

9, 5 = side length = back length plus the difference between 1, 2 and 9, 4. A direct measure taken on this body line could equally well be applied here.

Overwrap as required by style. Centre back without seam, on fold of fabric.

This is the simple grandmother of all capes: those which follow are modifications and adaptations of this basic type.

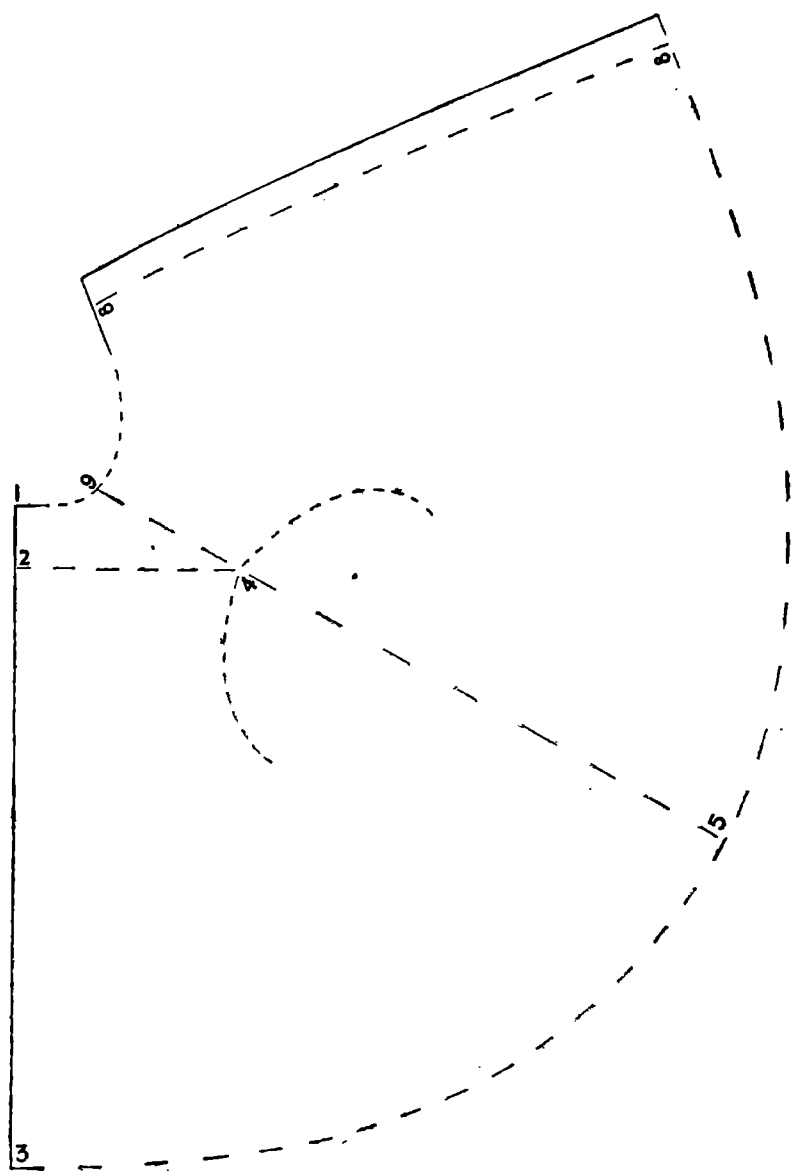


FIG. 59.

Half Cape (for same type of figure).

(Fig. 60.)

This is produced as the Full Cape (Fig. 59), except that the hem is reduced by 20 ins. (10 ins. on the half pattern). The shoulder ends are placed fairly at 4, and the neck points are 3 ins. apart. This is, of course, an arbitrary quantity, and may be increased or reduced according to the amount of hem reduction decided on. It should be noted, however, that a greater reduction

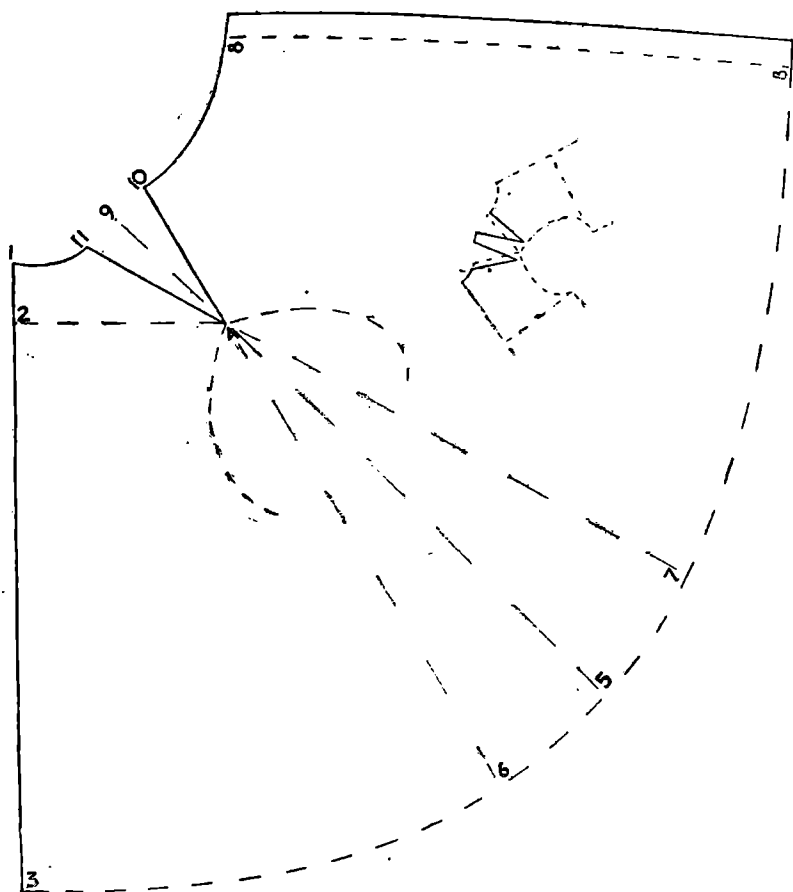


FIG. 60.

seam of Fig. 60 through to the hem. 3 ins. separate the neck points at 10, 11, and 8 ins. a side removed at 5, 6, 7. The shape of the hem is retained by lengthening, say $\frac{3}{4}$ in. at 6 and 7.

(b) CAPED GARMENTS

The Caped Ulster (W. Size).

Fig. 62 illustrates a variation of the Scarboro' and Inverness caped Ulsters. It may be designed with the sleeve, or without. If sleeveless, the scye should be drastically cleared at 12 and 13 on front and back.

12 = half shoulder width.

13 = a little nearer waistline than breastline. Both points are fixed arbitrarily with the needs of the garment in mind.

Front line, 8, 14, 8, should begin a little behind the crease of the lapel, curve gently to 14, to which point it will be secured by stitching and a terminal tack, thence to the front hem by a line

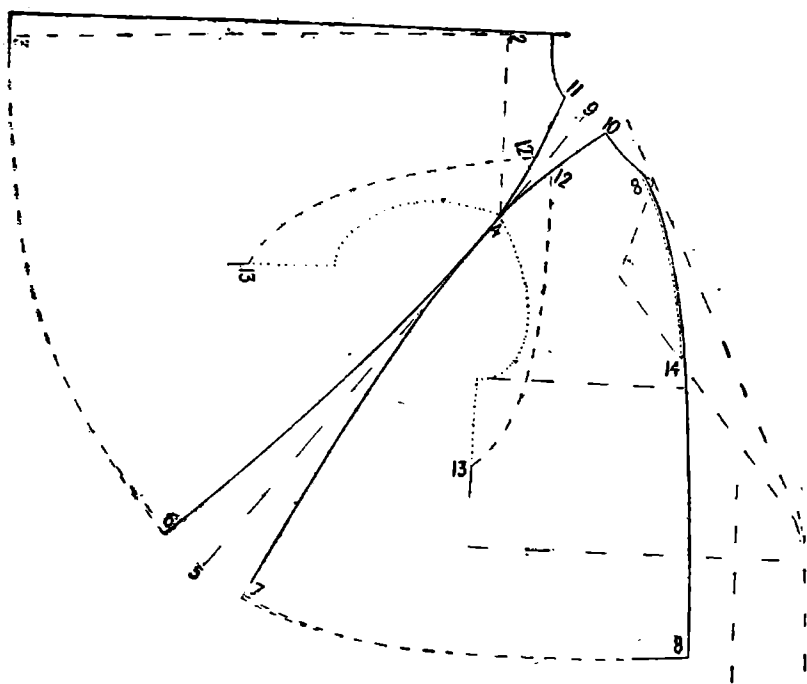


FIG. 62.

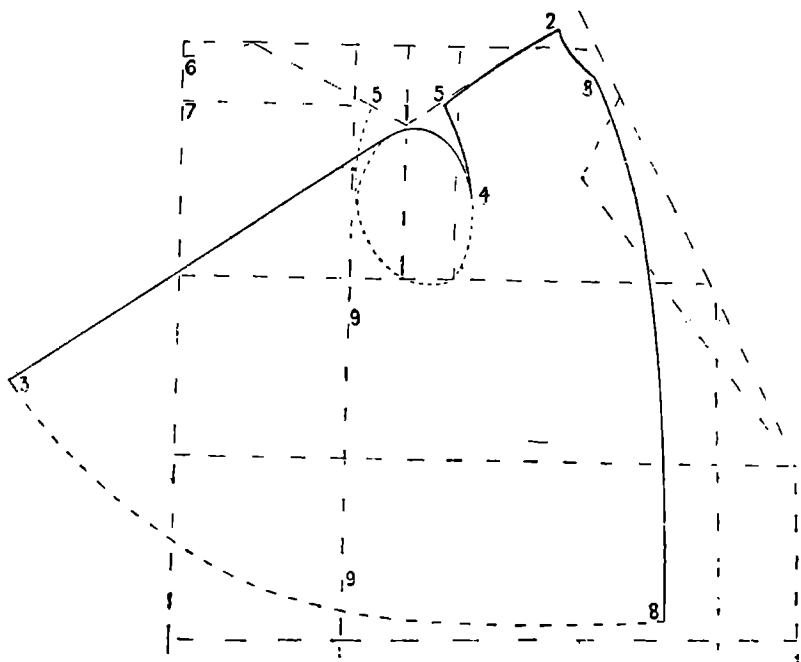


FIG. 63.

parallel to the front edge of the ulster. Otherwise, construct as for Shaped Half Cape (Fig. 61).

The Winged Ulster Cape (W. Size).

Fig. 63 is an interesting variant of the type. The cape covers the front and the arm, leaving the back of the ulster capeless. It is usually designed without sleeves, and the scye will therefore be cleared as in Fig. 62. The front, too, will be drawn as in the previous diagram.

One important point should be watched: in the base pattern the ends of the shoulder seams at 5 should be on the same level.

Line 1, 3 is a continuation of front shoulder 2, 5.

The length of wing may be taken as a direct measure from side nape, over shoulder, to wrist bone; and applied 2, 5, continuing 1, 3.

When the coat is joined at the shoulders 1 to 4 of the wing is placed to 4, 5 on ulster.

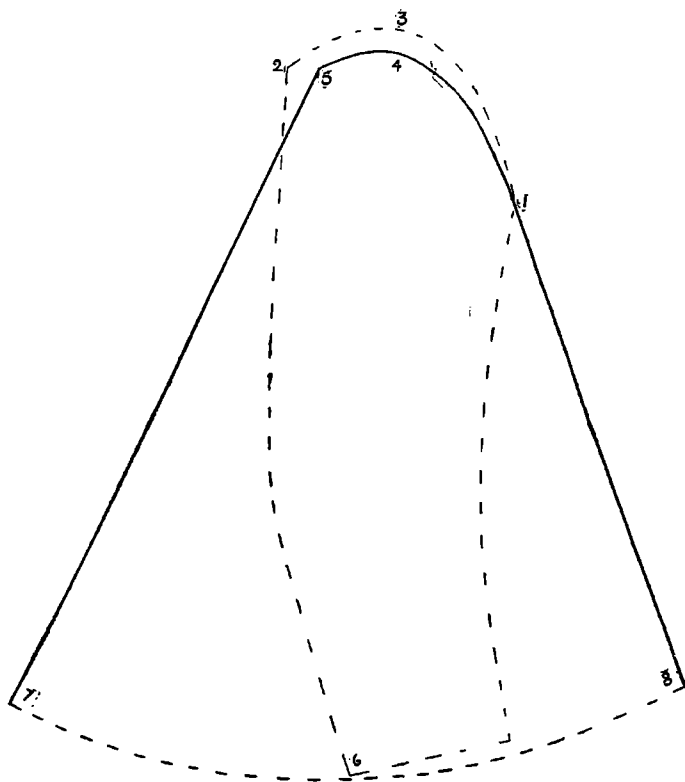


FIG. 64.

The back edge of the wing 1, 3 is attached to the garment on line 5, 9, 9.

Taking this winged cape as a starting-point, the design possibilities, based on its central theme, are great, and afford a wide field for experiment in style.

The Sleeve Cape

(Fig. 64.)

Plantagenet ladies and Tudor men would recognise and claim this caped feature, which has somehow become a favourite addition to the lighter street coats of this century.

It may be added to a sleeveless design; in which case the scye

would not be cleared. The cape would be fastened to the coat on line 5, 7.

Taking a normal outer sleeve as base, the cape should be reduced at 5 and 4 to clear away unwanted material and to give a clean fit at the top. It will be attached to the garment from 5, through 4, to about $1\frac{1}{2}$ ins. above the front pitch. From that point the front of cape will be clear to 8 at hem.

$2, 5 = \frac{3}{4}$ in.

Maintain the natural run of sleeve 5, 4, 1.

The run of hem is found by sweeping 3, 6 to 7 and 8.

If this type of very smooth cape-head is regarded as giving a too angular shoulder, an alternative form may be designed by following the contour of the sleeve top, and absorbing the normal excess by two small V's where the fullness of sleeve is at its greatest.

The amount of drapery in the cape is an arbitrary matter; in this instance it is 22 ins., 11 ins. being placed at 6, 8, and the same amount at 6, 7.

The draping qualities of the fabric, and the garment style will determine the amount of hem at 7 and 8; but it should not be overdone: it is an added touch of fashion, not a dominating feature. The choice of good contrasting tone for the lining fabric adds colour to line, and the result is a very charming Maid's style.

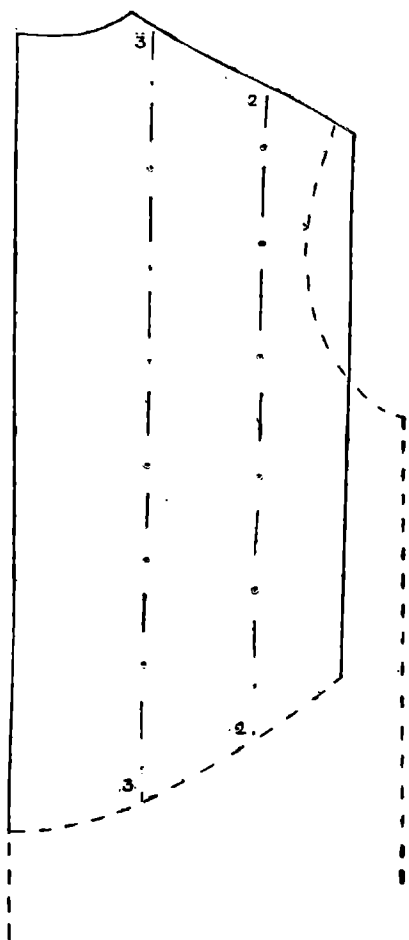


FIG. 65.

The Hanging Back Cape.

(Fig. 65.)

A good decorative feature for S.W. and Maid's sizes. Secured to the garment at the neck seam, the cape is lined with material of contrasting colour. It may be attached to the coat across the shoulder, or simply tacked securely at the shoulder end.

If drapery is desired, the hem may be extended, say 2 ins., at 2 and 3; and also, perhaps, at the centre back.

The shape of the hem may be varied to harmonise with any dominant style feature used in another part of the garment, or it can be treated on its merits as a solitary line capable of individual and original treatment.

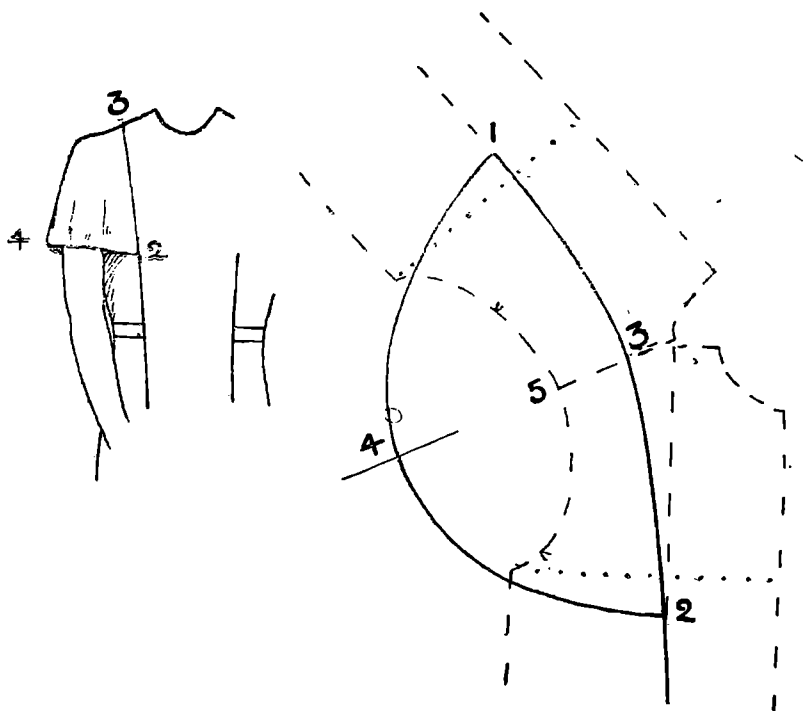


FIG. 66.

Simple Cape Design.

The design possibilities of the cape are illustrated in the simple shoulder feature, Fig. 66: an interesting addition to a rather severe house-frock. The pattern is laid fairly at the shoulder, 1, 3, 2 being the panel seam in which the cape is secured to the garment: 2 and 1 are a little below scye base. 3, 4 will be a little more, say $\frac{1}{2}$ in., than 3, 2 and 3, 1. The edge 1, 4, 2 may be plain, as shown, or shaped in escallop or dog-tooth pattern.

If more drapery is needed, it can be arranged while drafting the pattern by (a) opening the base pattern at 5, thus straightening line 2, 3, 1 and extending hem, or (b) when the cape pattern is cut insert wedges where required of the size needed, by the usual method of hem extension.

CHAPTER IX

THE ADVANCED FRONT

The proportionate male figure of normal stance is nearly flat on the front of the trunk—*i.e.* the body line, centre-front breast to navel shows no marked departure from the vertical. The centre-front garment line will, therefore, be at a right angle to the breast and waist construction lines on the pattern; and the front edge will be arranged normally beyond the centre-front garment line. No special construction of front, therefore, is demanded by the Regular, Long, or Short figures where posture is normal.

All women, too, should be assumed to be flat in the front abdomen: the assumption may not be truly made on the nude figure, but with this we are not here concerned. We have to do with the corseted form, that has achieved flatness of front by art, if not by natural inheritance. In all women's coats and jackets, therefore, front construction should proceed on this assumption: advancement of the front on the waist line, then, does not arise.

The form-types which demand the advanced front are:—

(a) All types of corpulent male figure (see Fig. 67*a*, corpulent man wearing a coat, the front of which has not been advanced).

(b) Those men of proportionate dimensions, whose posture causes the centre-front waist to protrude beyond a perpendicular line dropped from the centre-front breast.

Those in group (a) are fairly numerous: their abnormalities have been studied and provided for by departures from the normal working of proportionate systems.

Group (b) are more numerous than is generally thought, but little attention has been paid to their special needs—if special needs they have.

(a) When a man begins to put on weight, generally in middle life, the added tissue is not evenly distributed over the trunk and limbs: little is laid over those parts where the bone structure is near the surface, but much is deposited on the soft front of the trunk where the pelvic bones lie deep underneath. A little

filling-in of the side waist usually happens; at the back waist, over the spine, hardly any increase. The arm generally becomes a little more rounded, and the thigh and calf may add a little to their girths; but these additions are very small compared with the greatly increased girths of the waist and the belly. The breast girth will increase, but this dimension is taken over the rib structure just underneath, and therefore it is not expected to increase as does the soft front of the abdomen.

All this uneven deposit of tissue gives a form, or rather several forms, of disproportion, which must be provided for when the pattern is being made. There are also varying degrees of waist disproportion within each of the groups illustrated on Fig. 67 *b*. These well-recognised types of stout man show not only varying degrees of fatness in the front abdomen, but also the posture assumed by each type, varying from the obvious erect to the pronounced stoop. The matter is further complicated by the fact that given dimensions do not always connote the same stance; for example, it is quite common to find the dimensions of *C* with the posture of *A*, and the stance of *B* in a figure measuring as *A*.

Size and Balance.

The two factors of size and balance are, therefore, involved, and, seeing that a given size cannot be counted on to stand in a certain way, the two factors should be treated separately. Corpulency seems to develop on its own lines in each individual: it does not proceed "by geometric scale"; and it should not be expected that certain relative dimensions, denoting a departure from proportion, will imply that a given posture, requiring certain balance alterations, has been assumed by the figure.



FIG. 67 *a*.



FIG. 67 b.

Size.

What is known, however, is that the fronts of those garments which fit over the abdomen must be advanced, as much, and no more, as the actual body has advanced. And how much is this amount? The tape measure will give the most reliable answer, if it is possible to transfer the answer to the pattern in the correct places. A man measures 42 ins. breast girth, 45 ins. waist, and 46 ins. belly. Assume that a proportionate waist girth for a 42-ins.-breast man is, say, 37 ins., giving 45 ins. actual minus 37 ins. expected, equals 8 ins. disproportion. This amount is needed by the figure and must be put into the garment on the waist line. But at what points?

It is, of course, known that tissue has been laid on the body in varying degrees all round the waist; hardly anything at the spine, something at the side, the greatest amount at the front. This is all we know for certain of the theory of pattern making for the corpulent. Most garment systems for this type have been based on the assumption that this deposit of tissue proceeds on known and definite lines; that a certain fraction of the disproportion is laid on the sides and the remainder on the front: sometimes, indeed, it is arranged vice versa. Over thirty different applications of this idea appeared in the technical press of Britain, U.S.A., and Germany between 1935 and 1939: all, without

exception, accepted the old premiss that, of any given disproportion, a *definite* fraction belonged to the front and the remainder to the side. Nearly all demonstrated the idea by applying it to a simple garment with just a front and a back, a front edge and a sideseam. The matter may not be so involved as the theory, or as simple as the application.

In examining a number of sets of measures taken, over twenty years, from all types of corpulent men, one is first impressed by their diversity: they do not easily fall into any orthodox groupings. By ignoring certain important characteristics they may be made to conform, roughly, to the types drawn on Fig. 67 b; but only a few of them are good examples of any one type. The

measurements were taken sectionally, so they reflect balance as well as size.

The problem, then, seems to be, how to get the exact amount of advancement on the front waist. Its solution seems to lie in the application of a sectional measurement taken on the body in the front waist and transferred directly to the pattern. Where a comparison of complete breast girth with waist girth merely gives the amount to be added all round the waist, a comparison of two sectional measures will give the amount to be added in the front waist only. How, then, may such sectional measures be taken? The method of taking such measures for correct suppressions and increments is given in "Theory", pp. 110-12; and it may be applied here with reference to corpulency.

On the breast line of the body, over the waistcoat, put a piece of elastic, say $\frac{1}{4}$ in. wide, exactly where the tape is placed to take the breast girth, and where the breast construction line appears on the pattern; line 4, 3, 2, 1, Fig. 68. Then do the same in respect of the waist; line 8, 7, 6, 5. Care should be taken to have these two lines parallel to each other and to the floor.

Next take a vertical rod and place it upright exactly in the centre of the back. Mark on the lateral elastic bands, by pin or pencil, just where the centre is on each line: points 4, 8.

Then do the same at the centre front: points 1, 5.

Next place the rod a little to the front of the scye, and mark the two laterals where they cross; points 2, 6.

Finally, do the same close behind the scye; points 3, 7.

The trunk of the body has thus been divided by two lateral lines and four vertical lines, and the sections can now be measured and compared.

These points will be placed on the pattern draft as on Fig. 68: 6 below point 2, and 7 below 3. The amount from 6 to 5 on the body will then be transferred to the pattern on the waist line from 6 to 5, giving the advanced front for the figure.

It should be noted that this method uses a direct measurement, and that it is applied simply. Whenever a direct measure can be taken and applied accurately, such a dimension should be used: no derived measurement can be regarded as so reliable and simple. No system is here laid down for drawing a complete garment pattern for a corpulent man. There are many such systems, but the critical point in them all is the amount and method of front

waist advancement; and here a practical suggestion is made that can be embodied with advantage in any modern system.

In the case of the waistcoat (Fig. 68), which must fit snugly over the prominence, the *whole amount* of the triangle 5, 12, 13 must be removed by a dart taken from the pattern below the front of the pocket welt at 10, 9, 11: thus is the maximum shape given to a garment where smooth, clean fitting is essential.

A sac (Fig. 69) or an overgarment (Fig. 3) must, however, be treated differently. To bring line 3, 5 back to 3, 7, a dart equal to the triangle 3, 5, 7 would have to be removed from the pattern below the front tack of the pocket. This, of course, would result in the creation of too much shape in the front of the garment waist, and would call attention to the corpulence we are trying to partially obscure. So a good compromise is reached by removing *half the amount*, triangle 3, 7, 6, at 10, 9, 8.

In respect of the overgarment the same compromise is made.

Whatever further shape is needed in the front of the sac (and the overgarment) *is arranged by removing from the front edge any surplus material.* Design for the corpulent figure rules out double-breasted styles; and any type of single-breasted front can be arranged with edge lines that have the effect of slimming. Thus fitting shape and good design can combine to tone down front waist prominence.

This wedge device was introduced two generations ago by Mr. Donlon, a Liverpool cutter, and it was soon embodied in garment systems as an indispensable feature. Used with the method of advancing the front outlined above, a correct fit will be obtained.

Front Construction: Waistcoat (Fig. 68).

Measure the figure sectionally.

Basic garment construction by any reliable system.

1, 2 = front breast section.

6 perpendicular from 2.

6, 5 = front waist section. (In this case it exceeds 1, 2 by $1\frac{1}{2}$ ins.)

1, 5, 13 = centre front line.

5, 12 = at right angle to waist-line.

10 = front end of pocket.

10, 9, 11 = amount removed as dart to create shape.

The pattern is cut from the sideseam through the pocket to

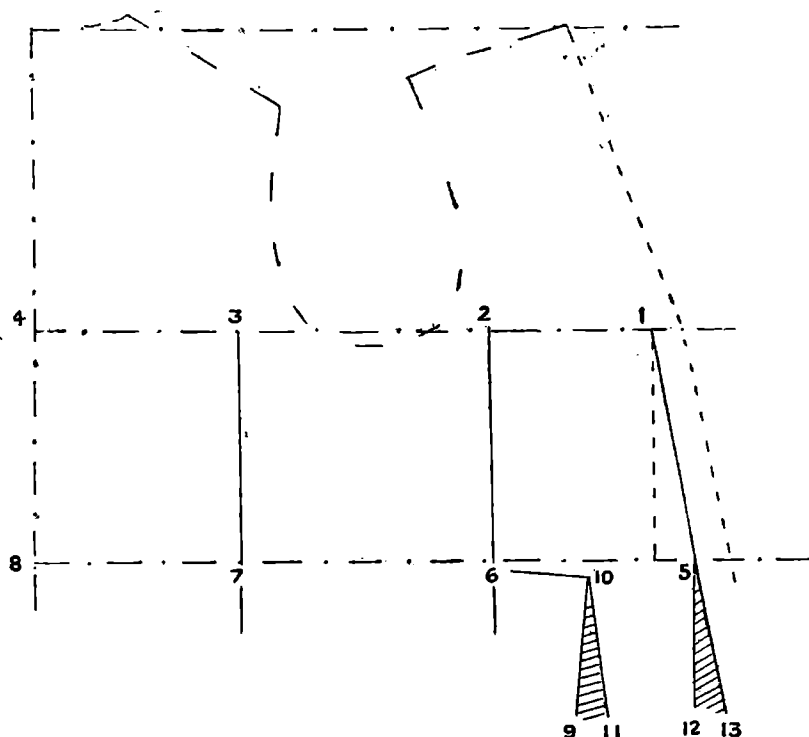


FIG. 68.

point 10. The dart 10, 9, 11 is then removed from the pattern, but no seam appears at the dart: this becomes a seam equivalent, the actual seam being from 10 back through pocket to the side-seam.

Front Construction: Sac (Fig. 69).

Measure figure sectionally.

Basic garment construction by any tested system.

1, 12 = front breast section.

4 = perpendicular from 12.

4, 3 = front waist section. (In this case it exceeds 1, 12 by $1\frac{1}{2}$ ins.)

1, 3, 5 = centre front line.

3, 7 = at right angle to waist line,

10 = front end of pocket.

6 = half of 5·7.

10, 9, 8 = triangle 3, 7, 6, and is the amount used to reduce hem, and to create shape about point 10. *It is here shown plainly that to take all 3, 7, 5 below 10 would give much more shape than is needed, and would reduce the hem to almost fitting dimensions.*

Dart 10, 9, 8 is removed from the pattern, but no seam appears in the garment on this line. The pattern is cut down the under-arm dart, thence to the front of the pocket at 10. (See Fig. 3 for appearance of flat pattern.)

The trousers for the same type of figure must also have the front advanced. The sectional measurement for the waistcoat

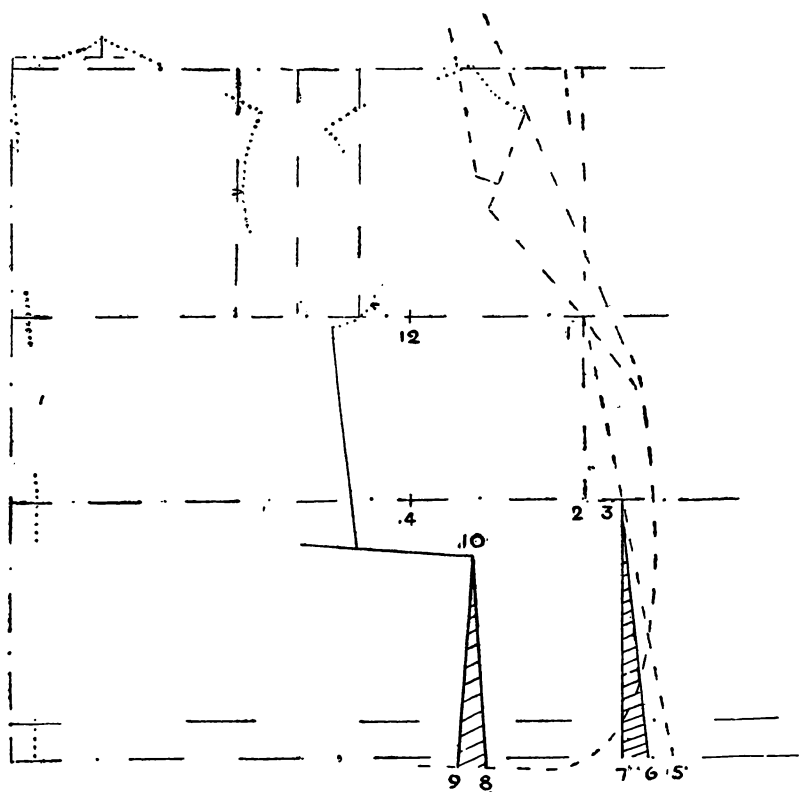


FIG. 69.

and sac has given the amount by which the front waist of those garments have been advanced. This quantity should be used in the trousers pattern for the same figure and applied from 1 to 2 (Fig. 70). Half of this amount should be added upwards from 3; and a small dart at 4 will give the closeness of fit needed in these garments at this part.

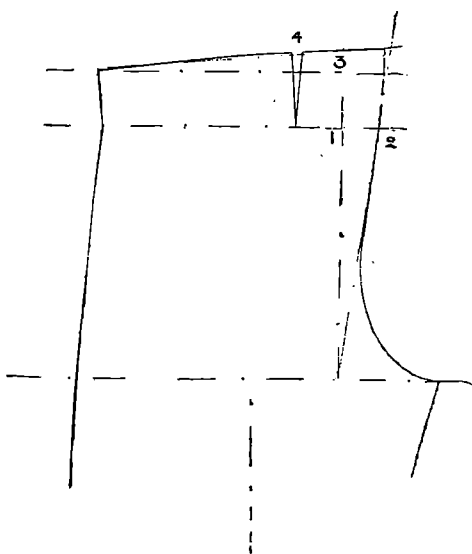


FIG. 70.

Balance.

Corpulency offers a wider variety of stance or posture than any other form of physical disproportion. The three types shown on Fig. 67 *b* are recognised forms of the corpulent man, but actually the varieties are much wider. Age, size, occupation, and physical habits seldom produce the same form type in any two individuals. In low corpulency, where the chest is relatively flat, there will certainly be a round back, requiring a longer balance length, and a forward position of the head, needing a shortened front. In a case of this kind, in an old man where the frame had weakened, the back was $2\frac{1}{2}$ ins. longer above the breast-line than was the front: thus extreme variations from the normal should be expected. In normal middle-life cases, however, bodily vigour makes the very natural effort to balance the extra bulk and weight on the front by an erectness of posture which we have come to associate with normal corpulency.

The practical problem, however, for the garment designer who has to make patterns for types, rather than for individuals, is his choice of types. The day to day practice of his firm will be his best guide, and he will produce ranges for three or four (certainly not more) well-marked figures. In producing these patterns living models are indispensable: these should be care-

fully chosen and measured, taking direct short measures of balance lengths, and sectional measures of girths, for suppressions and increments.

In taking particulars for leg garments, two points should be carefully noted; size and shape of seat, and open-ness of legs. In so many cases fat men have not the flat seat expected, nor the open-leg stance of the normal type. This, of course, is simply saying that corpulency is not to be sorted into text-book types: rather should the individual designer make his own types from the experience of his firm in catering for this group of men.

(b) The second type of man whose front waist is advanced is proportionate as to dimensions but unusual in posture. The problem presented by this type may be visualised if stated in terms of an experiment made to discover the numbers concerned. A number of senior men students were sectionally measured to find out exactly where point 3 on the body stood relative to point 2 (Fig. 69). The men ranged in age from nineteen years to thirty-three, breast girth to waist girth from 38 ins., 34 ins. to 35 ins., 30 ins. None was corpulent. All were (leaving out height, which does not arise here) roughly proportionate in dimensions. And yet six men, out of twenty-five, were found, whose posture caused the front waist to stand in advance of a perpendicular line dropped from the centre-front breast. Here, then, was the problem of the advanced front presented by one out of four of a representative cross-section of the working population from an industrial area. They were indoor workers whose tasks involved standing for most of the day. In extending the investigation to outdoor manual workers, and also to indoor people who worked seated, one out of six was found.

The problem of the advanced front, then, applies, at least in its theoretical form, not only to the fat man whose shape is mainly determined by excess of waist girth, but to at least one-sixth of the male working population whose shape is determined, not by size, but by the way they stand. No similar case was found in a number of working women, who were measured for purposes of comparison.

The matter has been stated in terms of an investigation, made chiefly to discover the extent of this departure from the normal. The following suggestions, made after much experiment, will offer a very practical approach to the problem:

(1) It was noted that a jacket with a normal, unadvanced front pulled on the front waist when buttoned, with a *slight* excess of garment about the top button, when fastened.

(2) This suggests that the matter may be corrected by adding a *little* locally on the front breast; thus securing a good run of front edge. This, of course, can be done only in a garment where the top button is not used for fastening: it will not normally apply to the waistcoat.

(3) The alternative to (2) is to first recognise the type of figure and to take sectional measurements to find the excess on the front waist, as is done in the case of the fat man. The total girths should, however, be measured sectionally, so that the greater-than-usual hollowness of back and side shape can be localised and provided for.

(4) The Donlon wedge is quite inappropriate in this case. In the corpulent figure this wedge is sound practice, for it suggests shape and reduces the garment hem. In the present figure neither of these may be done: they would suggest that the figure had a roundness of front which it certainly has not. The front should be kept flat, and not shaped in any way.

(5) A comparison of the measurements of the front waist section with the front breast will show that the amount to be added at front waist will average about $\frac{3}{8}$ in.; anything over $\frac{1}{2}$ in. would be exceptional.

(6) Methods based on the idea of disproportion have been published for dealing with this problem. They have not been generally acceptable, probably because this type of figure is not produced by disproportionate girths, but by posture; which is quite a different matter. The problem, then, comes down to one of shape created by posture and not by size; and it may best be approached by carefully taking sectional measures and applying them with care and intelligence. No run of garment edge suggesting a full front waist should be used for this figure type.

The Stocky Figure.

There remains one other form type that should be considered relative to the advanced front; the thick, stocky figure charted as "stout" or "short stout". Here the case is one of waist

girth larger than proportionate; and an example would be 40 ins. breast with 38 ins. waist girth. There will be at least 2 ins. disproportion in waist, but it should not be inferred that an additional 1 in. on each front edge at the waist is required. The great majority of men forming this figure group have no obvious local front development, but rather a general thickening of the figure all round. For this majority, then, no special front provision is needed. For the few exceptions, however, where the disproportion is localised in the front waist, the pattern should be made by sectional measurements, no wedge used, and the front edge used as in the preceding form type (b).

In every case where the advanced front is considered *shape* of front should determine procedure. Shape may be caused by disproportionate size, or by the way the man stands; and the cause should be determined before the method of making the pattern is decided. One axiom should be ever present in the designer's mind: the shape of the garment should be related to the general shape and characteristics of the figure considered generally. It is so easy, by making excessive provision for varying degrees of abnormality, to produce a garment which may accentuate the very defect it is sought to tone down or to give to the garment lines which suggest that the figure is other than it is.

APPENDIX

THE study of costume can best be pursued by examining authentic contemporary garments, rather than by the perusal of works on historic dress. A great deal of original work has been done, during the last thirty years, in the enlargement and arrangement of the dress collections in our own country; and the attention of the student is drawn to the following public, permanent exhibits of actual garments:

The British Museum.

The London Museum, whose catalogue of costume should be obtained.

The Victoria and Albert Museum; here can be seen the collection formed by Mr. Talbot Hughes, and presented to the Museum by Harrods, Ltd.

Good, but small, collections of garments are shown in the Art Galleries or Museums of most large provincial cities; Birmingham and Leeds, especially, being well-arranged. Special mention should be made of the fine collection in the Hereford Museum, built up by Mr. Morgan, the Curator, mainly from local sources. There are upwards of 800 different garments and dress accessories and, to quote from the catalogue, "a great endeavour has been made to secure costumes of the working and middle classes, rather than the elaborate dresses of the wealthy." By far the most complete collection, however, is that formed by Dr. C. Willet Cunningham of Colchester, and recently acquired by the Manchester City Art Gallery for a sum of £7000. The collection is housed in Platt Hall, and consists of more than 900 complete dresses, 650 hats, bonnets or caps, 90 shawls, 100 pairs of shoes, and a large number of ribbons, bustles, corsets, etc. There is also a large library of fashion papers and periodicals from 1780 onwards, and 15,000 photographs illustrating dresses of the last hundred years.

It is fitting that this remarkable collection should be available in the heart of the British textile industries, and within easy reach of the northern clothing districts. Everyone connected with the

fabric and garment industries should know this unique source of fashion inspiration.

For further reading, the technical works of Bridgland, Dellafera Morris, Poole, and Sytner should be used: they represent the modern English approach to the design of men's and women's garments.

Fashion journals, Continental, British, and American, will also be found sources of suggestion and inspiration. The following list includes the best of the world's artistic and technical publications devoted to dress.

DRESSES, GOWNS, ETC.

AIRMAIL SKETCHES.	MODES ROYALE.
THE AMBASSADOR.	L'OFFICIEL DE LA COUTURE.
AMERICAN FASHION.	PARFAIT.
L'ART ET LA MODE.	SILHOUETTES FEMININES.
D.O. FASHIONS AND FABRICS.	SILUETAS.
DRAPERS' RECORD.	SPLENDIDE.
ELEGANCE PRATIQUE.	VOGUE.
ELEGANCES.	VOTRE DESIRE.
ELITE.	WOMEN'S REPORTER.
IDEES ROBES.	WOMEN'S WEAR DAILY.
LIGNE NOUVELLE.	WOMEN'S WEAR NEWS.
MODES CHARMANTES.	

TAILORED GARMENTS

ADVANCE TAILORED WOMAN.	MANTEAUX ET COUTUMES.
AMERICAN CLOTHING TRADE	MANTEAUX ET TAILLEURS.
JOURNAL.	ORIGINAL MODELES.
AMERICAN LADIES' TAILOR.	STYLE FOR MEN.
LADIES' TAILOR.	TAILLEUR DE LUXE.
MAKER-UP.	TAILOR AND CUTTER.
MAN AND HIS CLOTHES.	TAILOR STYLES.

(Those journals not published in Britain can be obtained from R. D. Franks, Ltd., Oxford Circus, W.1.)

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